IX. *On the Tides.* By J. W. Lubbock, *Esq. V. P. and Treas. R.S.*

I HAVE already presented to the Society some tables exhibiting results obtained by the discussion of many observations of the tides made at the London Docks. I have now to communicate other tables, also calculated, according to my instructions, by Mr. Dessiou. In those already published in the Philosophical Transactions, which have reference to the corrections due to the influence of the parallax and declination of the moon, Mr. Dessiou employed only observations of the tides made between conjunction and opposition; but considering it of importance to establish these corrections upon a greater number of observations, and also to ascertain whether any appreciable difference existed, Mr. Dessiou undertook to obtain similar corrections from observations made between opposition and conjunction. The difference, if there be any, is very small.

It formerly escaped my notice, that the correction due to the influence of the moon's declination is mixed up with that for the calendar months: but the inclination of the moon's orbit to the ecliptic is small; and when observations are considered throughout an entire revolution of her node, she may be taken to move in the ecliptic; so that her time of transit being given on any day of the year, her declination is also given. This suggestion was made to me by Mr. Whewell, and I have endeavoured to remedy this difficulty, and have now calculated the correction for the calendar months roughly, which may serve until there has been time to obtain it with greater precision.

My corrections for the influence of the moon's parallax and declination may, I think, be safely adopted; and I doubt if they be susceptible of much further improvement. Their discrepancy from the theory of Bernoulli is worthy of remark, as may be seen in the following Table, which gives Bernoulli's correction for the influence of the moon's parallax, and that which Mr. Dessiou has calculated.

Time of Moon's Transit.	BERNOULLI.	Observation.	BERNOULLI.	Observation.	Time of Moon's Transit.
	Moon's Horizontal Parallax.				
	54′		60′		
0	+ 4	+12	− 4	−11	0
1	+ 2	+11	− 2	− 9	1
2	0	+ 7	0	− 7	2
3	− 2	+ 7	+ 2	− 6	3
4	− 4	+ 4	+ 4	− 6	4
5	− 7	+ 1	+ 5	− 3	5
6	− 9	+ 1	+ 7	− 3	6
7	− 9	+ 6	+ 6	− 7	7
8	0	+14	0	−11	8
9	+ 9	+18	− 6	−15	9
10	+ 9	+15	− 7	−16	10
11	+ 7	+13	− 5	−14	11

The correction for parallax 57′ being considered as given by the semimenstrual inequality, BERNOULLI's correction for the influence of the moon's declination is equally erroneous; but his accurate determination of the law of the semimenstrual inequality is one of the most important results ever obtained à priori by means of the theory of universal gravitation.

The theory of the tides is now, as Mr. WHEWELL remarks, in the state which that of the motions of the moon and planets presented about a century ago; and unless considerable exertions be made, it may so continue for many years to come. The tables of the planets have only acquired their present accuracy through the liberal encouragement of learned bodies, and of some of the governments of Europe; nor can tables of the tides, adapted to the present state of science, be now constructed, unless a very considerable expense be incurred, from the immense labour required.

In discussing tide observations, when the greatest possible accuracy is desired, and when the correctness of the observations appears to warrant such a nicety, in order to obtain any particular correction, all known approximate corrections of a different nature should first be separately applied to each observation with a contrary sign.

So, in the determination of the correction for the calendar months, it would be well to correct all the observations first for parallax and declination; and this consideration should be particularly attended to, where it is practicable, in attempting to determine, from a few observations, the establishment of any port and the semimenstrual inequality. The best method of verifying my tables would be to determine by their means the times and heights of high water at the London Docks for nineteen years, and then to classify the transits of the moon with the errors of those determinations, according to calendar months, and according to parallaxes and declinations: the average error corresponding to each calendar month would be the error of the Table* for the calendar months, and so for the rest.

* I allude now more particularly to that which accompanies this paper, not to any given previously.

Mr. W. PEIRCE, of the London Docks, under whose care the observations have been made, has kindly communicated to me the following information.

The observations were originally instituted at the instigation of Mr. W. VAUGHAN, of Fenchurch-street, then one of the directors, in consequence of having seen an account of the tides kept at Liverpool. The time was always taken by Wapping church clock, which is considered in Wapping as good a timekeeper as any in London. The observations, previously to the opening of the Docks, viz. from 1801 to January 1805, were taken by Mr. PEIRCE in the day, and by a foreman in the night. After the Docks opened, from 1805 to 1828, inclusive, they were taken by the watchman in the day, and by Mr. PEIRCE and two foremen, who attended alternately, fourteen nights each. From 1823 up to the present time they are taken in the day by the foreman at the entrance lock, in the night by two foremen alternately. The time has, at my instigation, been more particularly attended to since I had the accounts (1829), when Mr. PEIRCE gave the foreman charge to be particularly careful. The heights, previously to the opening of the Docks (viz. 1801 to 1805), were taken by the averaged eighteen-feet tide at the Trinity marks, or, as it is called, Trinity datum. The marks were fixed in a wall where the entrance now is. The lock being made five feet deeper than Trinity datum, there are twenty-three feet at the lock when the water is at the eighteen-feet mark Trinity datum ; therefore the difference between the lines from which the heights are reckoned in the books containing the observations is five feet ; so that eighteen feet previously to 1805 is the same height or depth as twenty-three feet after that time. In similar accounts of tide observations, the initials or the name at full length of the observer should be affixed to each observation, in order to afford a check upon the care with which they are made.

Sir JOHN HALL has kindly favoured me with the following information relative to the influence of the wind upon the tides in the port of London. Sir JOHN HALL procured the joint opinion of some nautical men, including the dock-master of the St. Katharine Docks, and the senior harbour-master of the port. The following is the result of their sentiments respecting the influence of the wind upon the tides in the river Thames.

During strong north-westerly gales, the tide marks high water earlier than otherwise, and does not give so much water, whilst the ebb-tide runs out later, and marks lower ; but upon the gales abating, and the weather moderating, the tides put in, and rise much higher, whilst they also run longer before high water is marked, and with more velocity of current, nor do they run out so long or so low. The reason assigned for all this is, that the strong north-west winds drive the sea along the Dutch coast, through the straits of Dover, and consequently away from the mouth of the Thames ; so that the tides, during north-west winds, are always much higher (producing frequently ruinous flooding,) on the Dutch than upon the English coast. A south-westerly gale has a contrary effect generally, and an easterly one gives some water ; but the tides, in all these cases, always improve the moment the weather moderates.

This is the opinion of those most competent to form one, from their daily experience, and is no doubt correct. The subject is one of considerable importance, as regards the accuracy of which tide predictions are susceptible, and merits further inquiry, in order to ascertain, if possible, the error which may be expected for a wind of given force and direction.

In order to obtain the correction for the calendar months, I begin by forming the following Table, which gives the moon's declination roughly, but sufficiently near for my purpose, in different months of the year, supposing her to move in the ecliptic.

TABLE A.

Moon's Transit.	January.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Moon's Transit.
h	°	°	°	°	°	°	°	°	°	°	°	°	h
0	21	13	2	10	19	23	22	14	3	8	18	23	0
1	18	6	4	15	22	23	19	8	4	14	21	23	1
2	11	0	10	19	23	22	14	2	10	18	23	22	2
3	8	6	16	22	23	19	9	4	15	21	23	19	3
4	3	12	20	23	22	14	2	10	19	23	22	15	4
5	5	17	22	23	19	9	4	15	22	23	19	9	5
6	11	20	23	22	15	3	10	19	23	22	15	3	6
7	16	23	23	19	10	4	15	22	23	19	10	3	7
8	20	23	21	14	3	10	19	23	23	16	4	9	8
9	22	23	18	9	3	15	22	23	19	10	2	15	9
10	23	20	14	3	9	19	23	21	15	4	9	19	10
11	21	17	9	4	15	22	23	18	9	2	14	22	11

The difference between the interval from the mean time of the moon's transit and the time of high water, and the mean interval, is according to the Table given in the Philosophical Transactions for 1831, p. 412.

TABLE B.

Moon's Transit.	January.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Moon's Transit.
h	m	m	m	m	m	m	m	m	m	m	m	m	h
0	− 5	+ 2	+ 4	+ 7	− 2	− 7	− 4	0	+ 9	+ 7	− 3	− 7	0
1	− 3	+ 3	+ 6	+ 4	− 3	− 7	− 1	+ 8	+ 8	+ 3	− 8	− 7	1
2	− 1	+ 3	+ 8	+ 3	− 6	− 6	− 1	+11	+ 8	+ 2	−10	− 7	2
3	+ 2	+ 6	+ 5	+ 1	− 9	− 5	+ 2	+10	+ 7	− 4	−11	− 8	3
4	+10	+ 7	+ 2	− 6	− 8	− 1	+10	+12	+ 4	− 9	−14	− 3	4
5	+13	+ 3	− 4	−12	− 9	+ 5	+15	+ 9	− 3	−15	−11	+ 1	5
6	+16	− 2	−12	−14	− 4	+14	+18	+ 5	−10	−18	− 4	+13	6
7	+13	−11	−22	−12	+ 7	+21	+14	− 5	−19	−14	+ 8	+16	7
8	0	−27	−26	− 4	+14	+16	+ 5	−11	−13	+ 6	+18	+14	8
9	− 7	−23	− 9	+ 5	+13	+ 3	− 8	−11	− 1	+13	+15	+ 6	9
10	− 8	− 8	+ 2	+ 6	+ 7	− 3	−11	− 5	+ 4	+14	+ 5	− 4	10
11	− 6	− 1	+ 3	+ 6	+ 4	− 7	− 7	− 2	+ 7	+ 8	+ 3	− 3	11

The number − 3, January, moon's transit 1ʰ, was inferred by subtracting 1ʰ 39ᵐ from 1ʰ 42ᵐ, column A.* Column A. is the semimenstrual inequality + a constant. If we suppose the proper argument of this inequality to be the apparent time of the

* Philosophical Transactions, 1831, p. 401.

moon's transit, as theory suggests, the equation of time for the middle of January being $+ 10^m$, then $1^h 39^m$ should be subtracted from $1^h 44^m\cdot 8$, the semimenstrual inequality corresponding to the moon's transit at 50^m. This gives $- 2\cdot 8$ to be ɔ dded to $- 3$. I therefore formed the following Table, which gives the quantity to be added for a given equation of time, in order to reduce the Table B. to what it should be, having the argument of the moon's transit in apparent time.

TABLE C.

Transit. Moon's	Equation of Time.		
	$+ 5$	$+ 10$	$+ 15$
h	m	m	m
0	—1·1	—2·3	—3·3
1	—1·2	—2·4	—3·6
2	—1·3	—2·7	—4·0
3	—1·3	—2·6	—3·9
4	— ·9	—1·8	—2·7
5	— ·5	—1·0	—1·5
6	0	0	0
7	+1·9	+3·9	+5·8
8	+2·8	+5·7	+8·4
9	+2·1	+4·2	+6·3
10	0	0	0
11	— ·7	—1·4	—2·1

By interpolation I then formed the following Table, taking the equation of time for the middle of the month.

TABLE D.

Time of Moon's Transit.	January.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Time of Moon's Transit.
	+10	+14	+ 9	0	— 4	0	+ 5	+ 4	— 5	—14	—15	— 4	
h													h
0	—2·3	—3·2	—1·9		+ ·9		—1·1	— ·9	+1·1	+3·2	+3·3	+ ·9	0
1	—2·4	—3·3	—2·1		+ ·9		—1·2	— ·9	+1·2	+3·3	+3·6	+ ·9	1
2	—2·7	—3·7	—2·4		+1·0		—1·3	—1·0	+1·3	+3·7	+4·0	+1·0	2
3	—2·6	—3·6	—2·3		+ ·9		—1·3	—1·0	+1·3	+3·6	+3·9	+ ·9	3
4	—1·8	—2·5	—1·6		+ ·7		— ·9	— ·7	+ ·9	+2·5	+2·7	+ ·7	4
5	—1·0	—1·4	— ·9		+ ·4		— ·5	— ·4	+ ·5	+1·4	+1·5	+ ·4	5
6	0	0	0		0		0	0	0	0	0	0	6
7	+3·0	+5·4	+3·5		—1·3		+1·4	+1·5	—1·4	—5·4	—5·8	—1·3	7
8	+5·7	+7·9	+5·1		—2·2		+2·8	+2·2	—2·8	—7·9	—8·4	—2·2	8
9	+4·2	+5·8	+3·9		—1·6		+2·1	+1·6	—2·1	—5·8	—6·3	—1·6	9
10	0	0	0		0		0	0	0	0	0	0	10
11	—1·4	—1·9	—1·2		+ ·5		— ·7	— ·5	+ ·7	+1·9	+2·1	+ ·5	11

Adding the figures in the preceding Table to those in Table B., neglecting fractions of a minute, I obtained the following.

Table E.

Moon's Transit.	January.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Moon's Transit.
h	m	m	m	m	m	m	m	m	m	m	m	m	h
0	− 7	− 1	+ 2	+ 7	− 1	− 7	− 5	− 1	+10	+10	0	− 6	0
1	− 5	0	+ 4	+ 4	− 2	− 7	− 2	+ 7	+ 9	+ 6	− 4	− 6	1
2	− 4	− 1	+ 6	+ 3	− 5	− 6	− 2	+10	+ 9	+ 6	− 6	− 7	2
3	− 1	+ 2	+ 2	+ 1	− 8	− 5	+ 1	+ 9	+ 8	0	− 7	− 7	3
4	+ 8	+ 5	0	− 6	− 7	− 1	+ 9	+11	+ 5	− 7	−11	− 2	4
5	+12	+ 2	− 5	−12	− 9	+ 5	+15	+ 9	− 3	−14	−10	+ 1	5
6	+16	− 2	−12	−14	− 4	+14	+18	+ 5	−10	−18	− 4	+13	6
7	+17	− 6	−19	−12	+ 6	+21	+15	− 4	−20	−19	+ 2	+15	7
8	+ 6	−19	−21	− 4	+12	+16	+ 8	− 9	−16	− 2	+10	+12	8
9	− 3	−17	− 5	+ 5	+11	+ 3	− 6	− 9	− 3	+ 7	+ 9	+ 4	9
10	− 8	− 8	+ 2	+ 6	+ 7	− 3	−11	− 5	+ 4	+14	+ 5	− 4	10
11	− 7	− 3	+ 2	+ 6	+ 4	− 7	− 8	− 2	+ 8	+10	+ 5	− 3	11

I next formed the following Table, which gives that portion of the preceding which is due to the moon's declination, the correction for the moon's declination being obtained, by means of Table A., from Table XIX.

Table F.

Moon's Transit.	January.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Moon's Transit.
h	m	m	m	m	m	m	m	m	m	m	m	m	h
0	− 6	+ 1	+ 7	+ 3	− 4	− 7	− 7	+ 1	+ 7	+ 5	− 3	− 7	0
1	0	+ 5	+ 5	+ 1	− 7	− 7	− 2	+ 4	+ 5	+ 1	− 6	− 7	1
2	+ 3	+ 5	+ 3	− 5	− 7	− 7	+ 1	+ 4	+ 1	− 7	− 7	− 7	2
3	+ 7	+ 7	− 1	− 6	− 6	− 4	+ 6	+ 6	0	− 6	− 6	− 4	3
4	+ 8	+ 6	− 4	− 7	− 7	+ 3	+ 8	+ 7	− 4	− 7	− 7	0	4
5	+12	− 1	− 7	− 7	− 4	+12	+12	+ 1	− 7	− 8	− 4	+12	5
6	+11	− 5	− 9	− 9	+ 2	+15	+11	− 5	− 9	− 9	+ 2	+15	6
7	− 1	−13	−13	− 6	+10	+17	+ 2	−11	−13	− 6	+10	+19	7
8	− 7	−14	− 8	+ 3	+17	+ 9	− 7	−15	−12	− 3	+15	+10	8
9	− 7	− 9	− 5	+ 8	+11	0	− 7	− 8	− 5	+ 7	+11	0	9
10	− 8	− 4	+ 3	+ 8	+ 7	− 4	− 6	− 4	0	+ 8	+ 7	− 4	10
11	− 7	− 3	+ 6	+ 7	0	− 8	− 8	− 5	+ 5	+ 6	+ 1	− 8	11

Subtracting the figures in the preceding Table from those in Table E., I get the following, which gives the correction for the calendar months.

Table G.

Moon's Transit.	January.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Moon's Transit.
h	m	m	m	m	m	m	m	m	m	m	m	m	h
0	− 1	− 2	− 5	+ 4	+ 3	0	+ 2	− 2	+ 3	+ 5	+ 3	+ 1	0
1	− 5	− 5	− 1	+ 3	+ 5	0	....	+ 3	+ 4	+ 5	+ 2	+ 1	1
2	− 8	− 6	+ 3	+ 8	+ 2	+ 1	− 3	+ 6	+ 8	+13	+ 1	0	2
3	− 8	− 5	+ 3	+ 7	− 2	− 1	− 5	+ 3	+ 8	+ 6	− 1	− 3	3
4	0	− 1	+ 4	+ 1	0	− 4	+	+ 4	+ 9	0	− 4	− 2	4
5	+ 2	+ 3	+ 2	− 5	− 5	− 7	+ 3	+ 8	+ 4	− 6	− 6	−11	5
6	+17	+ 3	− 3	− 5	− 6	− 1	+ 7	+10	− 1	− 9	− 6	− 2	6
7	+25	+ 7	− 6	− 6	− 4	+ 4	+13	+ 7	− 7	−13	− 8	− 4	7
8	+19	− 5	−13	− 7	− 5	+ 7	+15	+ 6	− 4	+ 1	− 5	+ 2	8
9	+ 6	− 8	0	− 3	0	+ 3	+ 1	− 1	+ 2	0	− 2	+ 4	9
10	− 2	− 4	− 5	− 2	0	+ 1	− 5	− 1	+ 4	+ 6	− 2	0	10
11	0	0	− 4	− 1	+ 4	− 1	0	+ 3	+ 2	+ 4	+ 4	+ 5	11

The numbers in the last Table are extremely irregular, and leave the correction due to the calendar months subject to much uncertainty.

The following Tables are subjoined, forming a sequel to those already printed in the Philosophical Transactions for 1831.

Table XXII. shows the height of high water at the London Docks, corresponding to the mean time of the moon's transit in each month of the year, from 6565 observations, made between the 1st of January 1808, and the 31st of December 1826 and between opposition and conjunction.

Table XXIII. is interpolated from Table XXII.

Table XXIV. gives the mean of Table XXIII. and Table V.

Table XXV. shows the time and height of high water at the London Docks, corresponding to the time of the moon's transit for every minute of horizontal parallax, from 5413 observations, made between the 1st of January 1808 and the 31st of December 1826, between opposition and conjunction.

Tables XXVI. and XXVII. are interpolated from Table XXV.

Table XXVIII. shows the time and height of high water at the London Docks, corresponding to the time of the moon's transit, and for every three degrees of her declination, north and south, from 5424 observations, made between the 1st of January 1808 and the 31st of December 1826, between opposition and conjunction.

Tables XXIX. and XXX. are interpolated from Table XXVIII.

Table XXXI. shows the difference in the interval between the time of the moon's transit and the time of high water, and the mean interval (Column A. Table III.) for every minute of the moon's horizontal parallax between opposition and conjunction.

Table XXXII. shows the difference in the height of high water, and the mean height (Column B. Table XXIII.) for every minute of the moon's horizontal parallax, between opposition and conjunction.

Table XXXIII. shows the difference in the interval between the time of the moon's transit and the time of high water, and the mean interval (Column A. Table III.) for every three degrees of the moon's declination, between opposition and conjunction.

Table XXXIV. shows the difference in the height of high water, and the mean height (Column B. Table XXIII.) for every three degrees of the moon's declination, between opposition and conjunction.

Table XXXV. (mean of Tables VII. and XXVI.) shows the interval between the moon's transit and the time of high water at the London Docks for every minute of her horizontal parallax, from 10,812 observations, made between the 1st of January 1808 and the 31st of December 1826.

Table XXXVI. shows the time and height of high water at the London Docks, corresponding to the mean time of the moon's transit for every minute of her horizontal parallax, from 10,812 observations, made between the 1st of January 1808 and 31st of December 1826.

Table XXXVII. is interpolated from Table XXXVI.

Table XXXVIII. (mean of Tables XI. and XXIX.) shows the interval between the moon's transit and the time of high water at the London Docks for every three degrees of her declination north or south, from 10,796 observations.

Table XXXIX. (mean of Table IX. and XXX.) shows the height of high water at the London Docks for every three degrees of the moon's declination north or south, from 10,796 observations.

Table XL. shows the difference in the interval between the time of the moon's transit and the time of high water, and the mean interval (Column A. Table III.) for every three degrees of her declination.

Table XLI. shows the difference in the height of high water, and the mean height (Column B. Table XXIV.) for every three degrees of the moon's declination.

Table XLII. shows the difference in the interval between the time of the moon's transit and the time of high water, and the mean interval (Column A. Table III.) for every minute of her horizontal parallax.

Table XLIII. shows the difference in the height of high water, and the mean height (Column B. Table XXIV.) for every minute of the moon's horizontal parallax.

Tables VI., IX., &c., given in the Philosophical Transactions for 1831, were formed from observations corresponding to transits of the moon between conjunction and opposition.

TABLE XXII.

Showing the Height of High Water at the London Docks corresponding to the mean time of the Moon's Transit in each month of the year ; from 6565 observations made between the 1st of January 1808 and the 31st of December 1826, and between opposition and conjunction.

January.			February.			March.			April.			May.			June.		
Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.
h m	Feet.		h m	Feet.		h m	Feet.		h m	Feet.		h m	Feet.		h m	Feet.	
26	22·12	23	28·2	22·42	21	24	22·61	28	16·5	22·89	22	10	22·82	21	15	22·33	20
56	22·16	21	58·8	22·66	23	53·2	22·91	22	46·5	23·12	22	40·2	23·91	23	45	22·44	20
1 26	22·62	22	1 28·3	22·9	23	1 24	23·04	25	1 14·8	23·25	22	1 11·2	22·94	22	1 14	22·63	20
1 54	22·91	21	1 59	23·18	22	1 55	23·36	27	1 44·5	23·36	21	1 41·5	23·02	20	1 45·5	22·66	23
2 26	22·58	27	2 29·5	22·94	27	2 25	23·19	20	2 14·5	23·14	21	2 10	22·91	21	2 17	22·56	22
2 57	22·73	23	3 0·2	23·11	20	2 54	22·94	25	2 44·5	22·69	23	2 41	22·83	23	2 47	22·64	20
3 26	22·54	21	3 29·5	22·66	24	3 23	22·76	22	3 16·5	22·68	21	3 10·5	22·48	20	3 15	22·3	22
3 54	22·2	24	4 1	22·47	25	3 52	22·4	21	3 47	22·39	21	3 38·2	21·15	20	3 46	22·13	25
4 26	21·41	26	4 31·2	22·05	20	4 23	22·0	26	4 15·5	20·06	19	4 9·2	21·92	25	4 16	21·79	22
4 55	21·47	25	4 59	21·96	20	4 55·5	21·33	22	4 45	21·72	22	4 41·8	21·5	26	4 45	21·4	24
5 25·5	21·06	26	5 32	21·48	23	5 24	20·94	20	5 16·2	21·15	22	5 12·2	21·09	22	5 15·5	21·2	26
5 56	20·69	25	5 59	21·16	19	5 50·5	20·56	20	5 46	20·37	20	5 40·5	20·47	23	5 46	20·64	25
6 24	20·51	23	6 26·5	20·27	18	6 23	19·87	24	6 13·2	20·04	19	6 10·5	20·11	24	6 15	20·19	22
6 56	19·96	25	6 58·8	19·82	25	6 54	19·13	20	6 44	19·46	25	6 40	19·89	26	6 45	20·08	30
7 27	19·28	23	7 29·5	19·37	17	7 23	18·8	23	7 15·5	18·96	24	7 10·5	19·45	24	7 17·5	19·79	24
7 56	19·63	23	7 59	19·2	20	7 53·5	18·81	22	7 45	19·32	21	7 40	19·62	26	7 46	19·8	21
8 26	19·61	22	8 28	19·17	19	8 23·3	18·94	23	8 14·5	19·55	24	8 11·5	19·83	27	8 14	19·98	24
8 55	19·66	20	8 59·2	19·11	20	8 54	19·18	25	8 45·5	19·72	26	8 41·8	20·34	24	8 45	20·29	25
9 24	19·94	22	9 33	20·2	19	9 24	20·08	22	9 16	20·35	23	9 11·2	20·84	26	9 17	20·37	24
9 54	20·33	21	9 57·5	20·2	19	9 53	20·33	23	9 45·5	20·86	25	9 42·5	21·15	25	9 46	21·0	20
10 26	21·12	23	10 28·8	20·78	21	10 23·5	20·44	26	10 14·5	21·39	22	10 11·2	21·54	24	10 15	21·29	22
10 57	21·44	21	11 0	20·47	23	10 55·5	21·16	27	10 45·8	21·86	30	10 40·2	21·97	21	10 47	21·55	22
11 26	21·55	21	11 31	20·68	20	11 26	21·78	23	11 17	22·55	20	11 10·8	22·09	26	11 17	21·81	21
11 55	22·03	20	12 0	21·77	21	11 54	22·34	22	11 45·8	22·56	22	11 41·2	22·38	22	11 46	21·13	20

TABLE XXII. (Continued).

July.			August.			September.			October.			November.			December.		
Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.
h m	Feet.		h m	Feet.		h m	Feet.		h m	Feet.		h m	Feet.		h m	Feet.	
23	22·03	21	20	22·37	26	10	22·45	23	1	23·04	23	0	22·42	22	9	21·96	23
53	22·36	22	51	22·56	23	39	22·68	23	29·5	22·82	25	29	22·63	20	40	21·36	22
1 20	22·55	23	1 18·5	22·85	21	1 10	22·95	27	1 0	23·11	22	1 0	22·78	21	1 11	22·62	21
1 51	22·65	21	1 48	22·86	26	1 41	23·07	25	1 30	23·13	24	1 30	22·86	23	1 41·5	22·16	25
2 20	22·62	25	2 19·2	22·81	26	2 12	22·88	23	2 0	22·6	22	2 1	22·53	21	2 14	22·45	21
2 51	22·49	25	2 50	22·62	23	2 41	22·48	22	2 29	22·63	23	2 30	22·3	20	2 43	22·7	21
3 21	22·32	25	3 19	22·6	22	3 10	22·67	23	3 0	22·59	22	3 0	22·16	21	3 11	22·14	23
3 52	22·31	25	3 49·8	22·25	27	3 39·5	22·54	21	3 30	22·3	22	3 30	22·36	22	3 41	22·09	25
4 21	22·09	27	4 21·8	22·0	22	4 9	22·8	23	4 1	22·63	23	3 59	21·76	20	4 12	21·65	23
4 52	21·6	26	4 51·5	21·6	22	4 40	21·25	22	4 31	21·33	20	4 30	21·61	24	4 40·5	21·39	24
5 22	21·39	23	5 19	21·6	22	5 11	21·2	23	5 0·5	21·03	23	5 1	21·11	24	5 11	20·87	29
5 50	20·97	26	5 48	20·86	26	5 41	20·3	19	5 31	20·2	23	5 30	20·19	20	5 42	20·38	25
6 22	20·43	28	6 19·5	20·22	25	6 10·5	19·42	20	6 2	19·86	21	6 0	19·7	26	6 12	19·95	26
6 51	20·17	24	6 50	19·76	22	6 41	19·62	19	6 30·5	19·26	24	6 31·5	19·54	25	6 41	19·78	24
7 20	19·92	23	7 20	19·54	23	7 10·5	19·11	21	7 0	18·78	20	7 2	19·78	22	7 9·5	19·58	24
7 49	19·75	22	7 50	19·26	21	7 41·5	18·66	21	7 29·2	18·71	26	7 30	19·36	23	7 40	19·81	28
8 20	19·79	24	8 19·5	19·47	24	8 11	18·87	22	8 1	19·09	25	7 59·5	19·39	26	8 12	20·41	25
8 50	19·49	22	8 49	19·39	21	8 41	19·36	20	8 31	19·55	23	8 29	20·07	23	8 40	19·8	23
9 21	20·16	22	9 19·2	19·86	23	9 10	19·79	22	9 1	20·12	25	9 0·5	20·66	26	9 13·5	20·33	25
9 51	20·5	21	9 51	20·32	23	9 40	20·46	25	9 30	21·0	23	9 31	21·17	24	9 42·5	21·26	19
10 20	20·87	20	10 21	20·91	21	10 10	21·25	23	10 0·5	21·53	29	10 1·5	21·76	23	10 11	21·39	22
10 50	21·29	21	10 51·5	21·25	22	10 40	21·2	21	10 32	22·04	25	10 31	22·49	22	10 41·5	21·75	22
11 20	21·68	22	11 19	21·45	21	11 95	22·05	26	11 2	22·35	24	10 59	22·22	19	11 10·5	21·48	20
11 51	21·85	24	11 49	22·03	22	11 39	22·51	22	11 31	22·8	22	11 28	22·58	23	11 41	22·4	21

TABLE XXIII. (Interpolated from Table XXII.)

Showing the Height of High Water at the London Docks.

Moon's Transit.	Jan. Height of Tide.	Feb. Height of Tide.	March. Height of Tide.	April. Height of Tide.	May. Height of Tide.	June. Height of Tide.	July. Height of Tide.	Aug. Height of Tide.	Sept. Height of Tide.	Oct. Height of Tide.	Nov. Height of Tide.	Dec. Height of Tide.	Mean. B.
h m	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0 0	22·05	21·77	22·39	22·71	22·68	21·71	21·9	22·15	22·49	23·03	22·42	22·1	22·18
0 30	22·13	22·44	22·67	22·99	23·54	22·38	22·11	22·43	22·61	22·83	22·63	21·56	22·53
1 0	22·22	22·67	22·94	23·2	23·29	22·54	22·41	22·65	22·86	23·11	22·78	22·17	22·74
1 30	22·66	22·91	23·08	23·31	22·99	22·64	22·58	22·85	23·03	23·13	22·86	22·33	22·86
2 0	22·85	23·17	23·33	23·25	22·95	22·61	22·64	22·84	22·95	22·6	22·54	22·33	22·84
2 30	22·6	22·94	23·15	22·97	22·86	22·6	22·58	22·74	22·63	22·63	22·3	22·59	22·72
3 0	22·71	23·11	22·9	22·69	22·59	22·48	22·44	22·61	22·6	22·16	22·36	22·36	22·60
3 30	22·5	22·66	22·7	22·61	21·53	22·22	22·32	22·48	22·58	22·3	22·36	22·11	22·36
4 0	22·09	22·48	22·3	22·26	21·69	21·97	22·25	22·17	22·72	21·65	21·76	21·82	22·10
4 30	21·42	22·07	21·88	21·89	21·66	21·6	21·95	21·89	21·43	21·34	21·61	21·49	21·69
5 0	21·43	21·95	21·25	21·5	21·25	21·3	21·54	21·6	21·22	21·03	21·13	21·05	21·35
5 30	21·03	21·45	20·87	20·8	20·7	20·93	21·27	21·32	20·63	20·23	20·19	20·57	20·83
6 0	20·66	21·14	20·4	20·2	20·23	20·42	20·80	20·62	19·73	19·88	19·7	20·12	20·33
6 30	20·44	20·19	19·71	19·72	19·96	20·13	20·35	20·06	19·55	19·78	19·55	19·84	19·90
7 0	19·87	19·8	19·01	19·17	19·6	19·95	20·09	19·69	19·29	18·78	19·76	19·65	19·55
7 30	19·32	19·37	18·8	19·14	19·57	19·8	19·86	19·45	18·83	18·72	19·36	19·73	19·33
8 0	19·63	19·2	18·84	19·43	19·76	19·89	19·76	19·33	18·8	19·08	19·4	20·19	19·44
8 30	19·62	19·17	18·98	19·64	20·15	20·14	19·69	19·43	19·18	19·53	20·09	20·02	19·64
9 0	19·71	19·13	19·26	20·03	20·65	20·33	19·71	19·56	19·64	20·1	20·65	20·12	19·91
9 30	19·98	20·15	20·19	20·6	21·03	20·65	20·26	20·02	20·24	21·0	21·15	20·86	20·51
10 0	20·45	20·23	20·37	21·12	21·39	21·14	20·61	20·5	20·99	21·52	21·73	21·34	20·95
10 30	21·19	20·76	20·62	21·63	21·82	21·42	21·03	21·01	21·22	22·01	22·47	21·61	21·40
11 0	21·46	20·47	21·26	22·17	22·05	21·62	21·42	21·31	21·77	22·33	22·23	21·58	21·64
11 30	21·61	20·67	21·84	22·55	22·28	21·5	21·73	21·66	22·37	22·78	22·56	22·08	21·97

TABLE XXIV.   (Mean of Table XXIII. and Table V.)

Moon's Transit.	Jan. Height of Tide.	Feb. Height of Tide.	March. Height of Tide.	April. Height of Tide.	May. Height of Tide.	June. Height of Tide.	July. Height of Tide.	Aug. Height of Tide.	Sept. Height of Tide.	Oct. Height of Tide.	Nov. Height of Tide.	Dec. Height of Tide.	Mean. B.
h m	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0 0	22·17	22·00	22·42	22·69	22·71	22·01	21·92	22·14	22·52	23·0	22·55	22·30	22·32
0 30	22·10	22·58	22·76	22·94	23·15	22·40	22·22	22·39	22·68	22·92	22·85	21·97	22·58
1 0	22·29	22·69	22·90	23·10	23·08	22·53	22·44	22·60	22·87	23·12	22·91	22·19	22·71
1 30	22·56	22·83	23·01	23·11	22·95	22·61	22·60	22·76	22·94	23·12	22·93	22·36	22·81
2 0	22·80	22·94	23·06	23·09	22·95	22·64	22·67	22·74	22·99	22·78	22·73	22·53	22·82
2 30	22·61	22·96	22·94	22·95	22·78	22·57	22·62	22·75	22·80	22·61	22·42	22·60	22·72
3 0	22·69	22·92	22·67	22·66	22·53	22·41	22·51	22·65	22·72	22·58	22·48	22·35	22·60
3 30	22·25	22·53	22·59	22·44	21·88	22·18	22·40	22·49	22·66	22·46	22·36	22·11	22·38
4 0	22·12	22·30	22·29	22·12	21·79	22·01	22·31	22·12	22·51	21·80	21·85	21·89	22·10
4 30	21·66	21·93	21·83	21·77	21·58	21·64	22·01	21·78	21·63	21·48	21·58	21·56	21·71
5 0	21·51	21·64	21·32	21·36	21·09	21·26	21·58	21·60	21·27	20·95	21·01	21·13	21·32
5 30	21·04	21·31	20·99	20·69	20·53	20·89	21·28	21·26	20·74	20·44	20·39	20·76	20·86
6 0	20·78	20·80	20·43	20·14	20·13	20·50	20·85	20·65	20·02	19·80	19·80	20·30	20·35
6 30	20·28	19·89	19·76	19·62	19·92	20·24	20·45	20·10	19·67	19·56	19·54	19·99	19·92
7 0	19·85	19·58	19·16	19·09	19·70	19·96	20·14	19·76	19·25	19·04	19·47	19·74	19·56
7 30	19·48	19·30	19·03	19·04	19·66	19·80	19·92	19·51	18·97	18·88	19·46	19·66	19·37
8 0	19·48	19·15	18·86	19·25	19·87	19·92	19·90	19·35	18·90	19·11	19·51	19·93	19·44
8 30	19·74	19·06	19·12	19·51	20·19	20·21	19·88	19·42	19·24	19·68	19·87	20·11	19·67
9 0	19·82	19·22	19·35	20·01	20·66	20·48	19·98	19·64	19·72	20·15	20·65	20·40	20·20
9 30	20·11	20·00	20·17	20·65	21·08	20·86	20·31	20·03	20·23	21·08	20·94	22·99	20·52
10 0	20·48	20·21	20·48	21·18	21·46	21·16	20·64	20·49	20·90	21·45	21·45	21·32	20·94
10 30	21·16	20·87	20·88	21·69	21·95	21·46	21·02	20·95	21·31	22·05	22·64	21·55	21·42
11 0	21·45	20·96	21·45	22·26	22·20	21·78	21·40	21·34	21·85	22·26	22·34	21·65	21·74
11 30	21·64	20·94	22·00	22·59	22·46	21·81	21·72	21·76	22·31	22·62	22·57	22·02	21·98

TABLE XXV.

Showing the Time and the Height of High Water at the London Docks, corresponding to the Mean Time of the Moon's Transit for every minute of Horizontal Parallax; from 5413 Observations made between the 1st of January 1808 and 31st of December 1826, between opposition and conjunction.

Hor. Par. 54'. Moon's Transit. A.M.	High Water.	Height of Tide.	No. of Obs.	Hor. Par. 55'. Moon's Transit. A.M.	High Water.	Height of Tide.	No. of Obs.	Hor. Par. 56'. Moon's Transit. A.M.	High Water.	Height of Tide.	No. of Obs.	Hor. Par. 57'. Moon's Transit. A.M.	High Water.	Height of Tide.	No. of Obs.
h m	h m	ft. in.		h m	h m	ft. in.		h m	h m	ft. in.		h m	h m	ft. in.	
0 28·1	2 31·9	22 2·9	84	0 31·5	2 32	22 2·5	57	0 29·5	2 24·5	22 1·7	47	0 28·6	2 20·8	22 8·5	37
1 30·9	3 13·8	22 3·8	84	1 33·3	3 15·3	22 3·2	61	1 31·1	3 9·7	22 9·4	43	1 33·6	3 5·6	22 9·9	41
2 31·8	3 5·6	21 11·5	82	2 34·4	3 55·5	22 1·9	60	2 35·9	3 55·6	22 4·1	51	2 34·6	3 51·3	22 7·3	38
3 32·7	4 40·7	21 8	79	3 34·2	4 38·1	21 9·9	65	3 32·8	4 38	22 1·3	54	3 30·9	4 36	22 5·6	45
4 37	5 26·3	20 11·1	73	4 32·3	5 49	21 0·6	75	4 32·9	5 25·3	21 5·2	50	4 32·2	5 22·6	21 6·3	55
5 34·5	6 16·7	20 0	66	5 31	6 16·5	20 4·1	80	5 31	6 14·4	21 0·5	60	5 31·5	6 14·4	21 0·8	62
6 32·4	7 21·2	19 0·3	66	6 31·3	7 16·9	19 6·5	88	6 30·9	7 17·3	19 7·7	55	6 31·1	7 15·8	19 11·6	58
7 31	8 44·1	18 8·9	73	7 30·4	8 42·6	18 11·5	78	7 29·7	8 41·6	19 0·7	56	7 29·3	8 32·3	19 5	48
8 30·3	10 26·6	19 4·9	79	8 29·8	10 21·1	19 4·5	69	8 30·9	10 16·3	19 6·7	56	8 32·2	10 15·7	19 5·9	47
9 32·1	11 54·1	20 2·9	84	9 32·3	11 50·9	20 2	65	9 31·9	11 45·2	20 4·7	49	9 30·2	11 36·7	20 8·2	40
10 32·1	12 56·4	21 0·6	86	10 29·2	12 51·3	21 0·7	58	10 31·9	12 46·8	21 2·6	48	10 32·8	12 45·2	21 4·3	39
11 31·1	13 46·9	21 7·4	86	11 29·5	13 40	21 10	56	11 31	13 39·7	21 11	43	11 31·5	13 36	22 0	39

TABLE XXV. (Continued).

	Hor. Par. 58'.				Hor. Par. 59'.				Hor. Par. 60'.				Hor. Par. 61'.		
Moon's Transit. A.M.	High Water.	Height of Tide.		No. of Obs.	Moon's Transit. A.M.	High Water.	Height of Tide.		No. of Obs.	Moon's Transit. A.M.	High Water.	Height of Tide.		No. of Obs.	Moon's Transit. A.M.	High Water.	Height of Tide.		No. of Obs.

Moon's Transit. A.M. (h m)	High Water (h m)	Height of Tide (ft. in.)	No. of Obs.	Moon's Transit. A.M. (h m)	High Water (h m)	Height of Tide (ft. in.)	No. of Obs.	Moon's Transit. A.M. (h m)	High Water (h m)	Height of Tide (ft. in.)	No. of Obs.	Moon's Transit. A.M. (h m)	High Water (h m)	Height of Tide (ft. in.)	No. of Obs.
32·4	2 20	22 6·9	35	0 32	2 15	22 4·8	42	0 32·2	2 13·2	22 11·3	49	0 30·4	2 5·4	23 2·7	102
1 28·2	2 59·5	23 1·1	37	1 33·8	3 1·6	23 4·8	43	1 33·6	2 58·6	23 4·2	51	1 31·3	2 53·1	23 4·7	92
2 28·3	3 49·7	23 0·9	41	2 35·1	3 44·4	23 3·7	48	2 34·6	3 47·1	23 3·2	79	2 25·7	3 34·5	23 6·4	51
3 34·5	4 33·8	22 6·6	47	3 30·9	4 28·3	23 0	63	3 29·8	4 25·8	23 2·3	97				
4 29·8	5 20·3	21 11·7	57	4 33	5 20·3	22 5	103	4 26	5 10·9	22 8·1	38				
5 30·8	6 12	20 11·7	62	5 28·6	6 7·9	21 7·6	121	5 15·3	5 22·3	21 10·3	3				
6 31·8	7 12·4	20 2·4	64	6 30·8	7 10·8	20 5·5	121								
7 29·5	8 30·5	19 8	64	7 27·8	8 22·1	19 9·1	103	7 41·2	8 42·8	19 11·7	25				
8 25·8	10 2·7	19 10·5	54	8 25·6	9 54·7	19 10·6	67	8 35·8	10 5·4	20 0·5	77				
9 31·3	11 32·2	20 10	48	9 30·5	11 23·7	21 0·5	53	9 27·2	11 15·6	21 1·4	84	9 43·9	11 36·1	21 0·8	31
10 32·4	12 40·2	21 5·6	44	10 30·7	12 31·9	21 8·3	40	10 31·3	12 26·8	21 9·2	57	10 32·9	12 27·3	21 10	79
11 31·2	13 30·9	22 4·7	43	11 29·1	13 26·4	22 6·5	39	11 28·1	13 18·7	22 4·9	46	11 31·2	13 18·5	22 5·7	98

TABLE XXVI. (Interpolated from Table XXV.)

Showing the Interval between the Moon's Transit, A.M., and the Time of High Water at the London Docks, for every minute of her Horizontal Parallax between opposition and conjunction.

Moon's Transit. A.M.	H. P. 54'.	H. P. 55'.	H. P. 56'.	H. P. 57'.	H. P. 58'.	H. P. 59'.	H. P. 60'.	H. P. 61'.
h m	h m	h m	h m	h m	h m	h m	h m	h m
0 0	2 10	2 6	2 3	1 58·8	1 55	1 51	1 46·7	1 41·5
0 30	2 3·2	2 0·7	1 54·9	1 51·8	1 48·2	1 43·5	1 41·5	1 35
1 0	1 53	1 51·8	1 46·9	1 41·8	1 39·5	1 36·2	1 33·6	1 28·5
1 30	1 42·8	1 43	1 38·9	1 31·8	1 30·9	1 28·9	1 26	1 22
2 0	1 33·9	1 32·8	1 30·6	1 24·5	1 25·9	1 19·7	1 19·8	1 16
2 30	1 25	1 22·6	1 21·4	1 17·7	1 20·9	1 10·6	1 13·7	1 10
3 0	1 16·8	1 13·9	1 13·5	1 11·5	1 10·7	1 4·1	1 4·8	
3 30	1 8·7	1 5·1	1 5·9	1 5·3	1 0·5	0 57·6	0 56	
4 0	1 0·5	0 59·7	0 59·4	0 58	0 55·4	0 52·8	0 50	
4 30	0 52·3	0 54·4	0 53	0 50·8	0 50·3	0 48	0 44	
5 0	0 46·3	0 49·6	0 48	0 46·5	0 45·8	0 43·6		
5 30	0 42·8	0 45·7	0 43·6	0 43	0 41·3	0 39·2		
6 0	0 44	0 43	0 42	0 41	0 39	0 37·8		
6 30	0 51	0 45·6	0 46·3	0 44·5	0 40·3	0 39·9		
7 0	1 0	0 55·6	0 56·8	0 52·9	0 48	0 46		
7 30	1 13·5	1 12·3	1 12	1 3·3	1 1·2	0 55·2		
8 0	1 34	1 31	1 28	1 22	1 20	1 11·5		
8 30	1 56·3	1 51·3	1 44·9	1 42·4	1 38·8	1 31·2	1 27	
9 0	2 12·6	2 7·5	2 1·5	1 57	1 52	1 44·5	1 40·5	
9 30	2 21·2	2 17·6	2 12·4	2 6·5	2 0·7	1 53	1 49	
10 0	2 24·6	2 22·5	2 16	2 12	2 6	1 59	1 53·5	1 54
10 30	2 24·2	2 22·2	2 14·8	2 12·5	2 7·8	2 1·2	1 55·5	1 54·8
11 0	2 21	2 17·5	2 13	2 10	2 5·5	2 1	1 54	1 52
11 30	2 15·9	2 10·4	2 8·6	2 4·8	2 0	1 57·2	1 50·5	1 47

TABLE XXVII.   (Interpolated from Table XXV.)

Showing the Height of High Water at the London Docks for every minute of the Moon's Horizontal Parallax between opposition and conjunction.

Moon's Transit. A.M.	H. P. 54'.	H. P. 55'.	H. P. 56'.	H. P. 57'.	H. P. 58'.	H. P. 59'.	H. P. 60'.	H. P. 61'.
h m	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0 0	21·86	22·05	22·06	22·39	22·48	22·48	22·67	22·85
0 30	22·30	22·28	22·14	22·70	22·56	22·39	22·93	23·22
1 0	22·40	22·26	22·48	22·76	22·83	22·85	23·14	23·25
1 30	22·30	22·24	22·78	22·81	23·08	23·33	23·33	23·47
2 0	22·20	22·22	22·58	22·73	23·07	23·35	23·31	23·47
2 30	21·96	22·19	22·37	22·62	23·05	23·30	23·25	23·54
3 0	21·84	22·04	22·24	22·54	22·81	23·15	23·22	
3 30	21·67	21·86	22·11	22·46	22·58	23·01	23·18	
4 0	21·36	21·44	21·81	22·02	22·24	22·72	22·92	
4 30	21·03	21·06	21·47	21·56	21·96	22·44	21·64	
5 0	20·56	20·73	21·24	21·30	21·48	21·96		
5 30	20·08	20·35	21·04	21·06	20·98	21·61		
6 0	19·58	19·96	20·36	20·53	20·59	21·04		
6 30	19·10	19·55	19·66	19·99	20·22	20·49		
7 0	18·73	19·18	19·36	19·69	19·95	20·11		
7 30	17·72	18·96	19·08	19·42	19·66	19·76		
8 0	19·00	19·12	19·31	19·45	19·76	19·72		
8 30	19·41	19·38	19·55	19·48	19·92	19·95	20·03	
9 0	19·82	19·73	19·96	20·05	20·37	20·44	20·55	
9 30	20·22	20·14	20·36	20·68	20·82	21·04	21·14	
10 0	20·62	20·60	20·78	21·02	21·13	21·36	21·44	21·31
10 30	21·03	21·06	21·24	21·33	21·45	21·68	21·76	21·79
11 0	21·33	21·44	21·55	21·66	21·91	22·21	22·09	22·13
11 30	21·60	21·83	21·91	21·99	22·37	22·53	22·42	22·55

TABLE XXVIII.

Showing the Time and Height of High Water at the London Docks, corresponding to the mean time of the Moon's Transit for every three degrees of her declination north and south; from 5424 observations, made between the 1st of January 1808 and the 31st of December 1826, between opposition and conjunction.

1° 30' S. to 1° 30' N. Decl.			
Moon's Transit.	High Water.	Height of Tide.	No. of Obs.
h m	h m	ft. in.	
0 35·5	2 29	22 7·6	19
1 38·1	3 16·2	22 11·8	20
2 41·3	4 2·6	22 6·3	21
3 36·3	4 45·8	22 6·1	19
4 36·9	5 40	21 4·2	18
5 33·8	6 31·3	20 10·3	16
6 31·8	7 31·7	19 7·4	14
7 23·3	8 45·9	19 9·4	16
8 22·1	10 16·6	20 0·6	18
9 28·8	11 35	20 8·3	17
10 33·2	12 52·7	21 10·4	20
11 30·8	13 41	22 1	20

TABLE XXVIII. (Continued).

North Declination (upper)

1° 30′ to 4° 30′ North Decl.				4° 30′ to 7° 30′ North Decl.				7° 30′ to 10° 30′ North Decl.			
Moon's Transit.	High Water.	Height of Tide.	No. of Obs.	Moon's Transit.	High Water.	Height of Tide.	No. of Obs.	Moon's Transit.	High Water.	Height of Tide.	No. of Obs.
h m	h m	ft. in.		h m	h m	ft. in.		h m	h m	ft. in.	
0 32·4	2 27·6	22 8·7	19	0 32	2 24·7	23 0	22	0 33·9	2 22·3	22 10·6	15
1 34·5	3 11·6	23 0·9	18	1 38	3 12·7	23 3·2	24	1 34·7	3 13·7	22 10·6	13
2 41·6	4 6	22 11	14	2 37·5	4 0·2	22 5·2	21	2 38	4 1·1	22 8·8	22
3 42	4 47·3	22 5·2	17	3 35·7	4 48·7	22 3·7	19	3 38	4 48·1	22 3·7	19
4 38·9	5 37·9	21 10	17	4 29·8	5 27·6	21 11·8	19	4 37·2	5 39·4	21 7·5	19
5 32·1	6 28·5	20 11	17	5 32·3	6 23	20 10·9	16	5 31·4	6 30·2	20 5·6	21
6 27·8	7 32	19 9·9	20	6 31·8	7 28·5	20 6·6	20	6 26·1	7 20·2	19 6·2	20
7 25·8	8 46·3	19 10·9	19	7 29·2	8 45·5	19 5·2	19	7 25	8 48·3	19 9·2	18
8 26·8	10 21	20 2·7	19	8 26·4	10 16·6	20 0	18	8 23·7	10 13·7	19 11·4	20
9 23·4	11 36	20 8·9	19	9 27·1	11 44·2	21 1·1	20	9 23·4	11 42·6	20 8·8	21
10 28·1	12 42·4	21 10·8	21	10 25·6	12 43·7	21 11	21	10 32·4	12 50·3	22 0·7	17
11 28·9	13 43·6	22 3·5	18	11 27	13 37·6	22 4·8	17	11 30	13 39	22 3·7	20

South Declination (upper)

1° 30′ to 4° 30′ South Decl.				4° 30′ to 7° 30′ South Decl.				7° 30′ to 10° 30′ South Decl.			
0 30·5	2 27·8	22 8·1	18	0 33·2	2 27·8	22 10·4	21	0 34·8	2 32·5	22 8	22
1 35	3 12·4	22 11·7	19	1 37·6	3 17·5	23 2·8	16	1 36·9	3 14·2	22 10·8	19
2 39·2	4 1·8	23 0·6	19	2 45·3	4 6·5	22 10·9	19	2 36·4	4 1·4	22 10·4	24
3 35·5	4 45·5	22 8·3	20	3 44·2	4 52·5	22 8·5	18	3 34·3	4 43·3	22 5·5	18
4 41·7	5 41·3	21 5·8	15	4 33·8	5 37·5	21 4·8	16	4 42·5	5 40·8	21 9·2	18
5 36·3	6 31·7	20 11·5	17	5 34·3	6 29·4	20 9·8	18	4 35	6 28·2	20 10·1	17
6 23·2	7 20·8	20 3·8	17	6 31·9	7 31·9	20 3	21	6 28·3	7 24·5	20 4·6	19
7 27·8	8 45·5	19 10·3	18	7 21·6	8 35	19 3·1	18	7 28	8 49·1	19 6·7	18
8 29·9	10 20·3	20 5·4	17	8 25·3	10 14·5	19 11·6	20	8 33·1	10 24·5	19 7·4	20
9 28·2	11 43·5	20 10·9	17	9 25·1	11 39·7	20 9·7	19	9 31·2	11 41·5	20 10·1	20
10 27·5	12 46·5	21 8·4	17	10 33·3	12 49	21 6·8	18	10 23·5	12 46·7	21 8	21
11 28·1	13 40·8	22 5·3	19	11 32·7	13 44·3	22 4	16	11 30	13 40·4	22 3·4	22

North Declination (lower)

10° 30′ to 13° 30′ North Decl.				13° 30′ to 16° 30′ North Decl.				16° 30′ to 19° 30′ North Decl.			
h m	h m	ft. in.		h m	h m	ft. in.		h m	h m	ft. in.	
0 28·6	2 23·8	22 3·3	22	0 27·4	2 20	22 7·1	28	0 26·4	2 17·6	22 5·6	36
1 33·8	3 8	23 2·7	25	1 26·9	3 0·1	22 9·8	28	1 28·2	3 5·8	22 8·6	37
2 35·4	3 54·4	22 10	18	2 28·4	3 49	22 1·9	27	2 24	3 41·5	22 7·3	38
3 36	4 41·5	22 7·1	20	3 30·1	4 29·4	22 6·4	26	3 28	4 29·5	22 5·4	42
4 31·2	5 32·5	21 6	24	4 30·5	5 22·3	21 8·9	26	4 25·3	5 18·7	21 7·2	34
5 28·6	6 18·2	21 1·8	22	5 28·3	6 14·2	20 8·7	26	5 25·1	6 5	21 0	38
6 29·5	7 16·1	19 11·6	17	6 31·7	7 21·9	19 7·3	26	6 28·9	7 12·6	19 9·2	40
7 24	8 35·2	19 4·5	21	7 24·2	8 38·2	19 9·9	25	7 24·8	8 29·7	19 6	38
8 27·7	10 18·1	19 10	23	8 26·8	10 15·9	19 7·7	28	8 31·2	10 9·8	19 8·5	37
9 24·1	11 35·2	20 10·6	22	9 31·9	11 38·7	20 7·2	24	9 31	11 37·1	20 5·8	37
10 29·2	12 47·3	21 7·1	26	10 31·7	12 47	21 4·4	27	10 31·4	12 42·5	21 5·1	34
11 24·7	13 31·6	22 4·6	25	11 31·6	13 35	22 1·6	28	11 32·3	13 27·8	22 0·1	38

South Declination (lower)

10° 30′ to 13° 30′ South Decl.				13° 30′ to 16° 30′ South Decl.				16° 30′ to 19° 30′ South Decl.			
0 33	2 27·4	22 9·2	25	0 32	2 15·8	22 9·6	21	0 32·7	2 16·3	22 7·5	34
1 30·5	3 10·4	22 11·1	23	1 33·2	3 7·2	23 2·2	29	1 33·2	3 2·8	23 1·9	29
2 35·4	3 53·7	22 6·4	24	2 37·5	3 55	22 10	24	2 31·3	3 46·7	22 11·6	37
3 37·3	4 41·8	22 4·8	25	3 41·6	4 43	22 6·7	20	3 31·4	4 31	22 6·8	43
4 38	5 28·8	21 7·2	27	4 37·7	5 24·8	21 9·8	26	4 34·4	5 19·6	21 9·8	39
5 35·5	6 25·7	21 1·2	20	5 35·4	6 15·3	21 2·3	33	5 35·6	6 14·1	20 10·5	36
6 34·4	7 31·6	20 0·1	25	6 35·6	7 22·9	19 8	24	6 38·1	7 19·3	20 0·5	39
7 31·2	8 41·8	19 1·9	21	7 30·3	8 35·5	19 5·2	26	7 37·7	8 40·2	19 2·1	40
8 29·7	10 14·1	20 0·6	22	8 29·9	10 10·9	19 7·1	22	8 38·8	10 10·6	19 7·1	40
9 32·9	11 39·3	20 4·5	22	9 31·4	11 32·5	20 9·5	32	9 36·5	11 36·1	20 4·7	26
10 31	12 41·4	21 10·9	22	10 32·2	12 41·3	21 10·1	24	10 33·6	12 37·1	21 5·3	38
11 29	13 30·6	22 6	24	11 29·8	13 27·7	21 10·9	27	11 31·1	13 27·8	22 0·1	37

TABLE XXVIII.   (Continued).

19° 30′ to 22° 30′ North Decl.				22° 30′ to 25° 30′ North Decl.				Above 25° 30′ North Decl.			
Moon's Transit.	High Water.	Height of Tide.	No. of Obs.	Moon's Transit.	High Water.	Height of Tide.	No. of Obs.	Moon's Transit.	High Water.	Height of Tide.	No. of Obs.
h m	h m	ft. in.		h m	h m	ft. in.		h m	h m	ft. in.	
0 26·2	2 10·4	22 6·5	28	0 28·9	2 7·9	22 1	31	0 25·2	2 6·8	22 3·4	14
1 26	2 49	23 1·3	31	1 24·3	2 52·3	22 7·1	17	1 23·1	2 50·2	22 3	21
2 24·5	3 35	22 7·6	27	2 22·7	3 35·5	22 5·6	26	2 23·9	3 29·2	22 6	14
3 26·1	4 23	22 0·9	25	3 27·1	4 16	22 4·1	20	3 16·4	4 7·9	22 3·4	24
4 23·7	5 9·8	21 10·7	34	4 23·6	5 1·2	21 6	24	4 13·2	4 49·5	21 5·5	21
5 23·2	5 56·2	20 10·1	36	5 28·7	5 58·6	20 5·3	19	5 22	5 44·5	20 7	23
6 30·7	7 3·9	20 0	27	6 21·8	6 42·3	19 3·3	51	6 24·5	6 52·4	19 8	25
7 27·8	8 19·8	18 10·2	31	7 38·2	8 26·7	18 11·1	23	7 28·5	8 14·8	19 0	23
8 33·1	10 11·5	19 6·7	29	8 30·5	10 31	19 4·5	24	8 29·7	9 55·9	19 4·3	22
9 29·2	11 34·2	20 10·7	31	9 36·1	11 33·2	20 1·8	23	9 34·1	11 24·8	19 11·5	21
10 35·1	12 40·2	21 2·2	30	10 31·2	12 31·6	21 1·1	22	10 33·4	12 32·4	20 10·5	21
11 31	13 31·3	21 10·9	29	11 35·8	13 27	22 0·7	25	11 30·2	13 23·1	21 10·3	18

19° 30′ to 22° 30′ South Decl.				22° 30′ to 25° 30′ South Decl.				Above 25° 30′ South Decl.			
0 30·3	2 19	22 7·5	32	0 34·9	2 19·4	22 3·9	25	0 32·9	2 11	22 4·9	20
1 33·6	3 2	22 11·8	30	1 35·2	3 3·9	22 8·1	19	1 30	2 54·3	22 6·1	22
2 32·7	3 46·4	22 10·9	28	2 33·4	3 44·8	22 11·6	28	2 28·6	3 34·5	22 6·4	20
3 30·9	4 30·3	22 3·1	32	3 32·5	4 27	22 4	22	3 31·7	4 20·9	22 4·5	21
4 39·3	5 25·8	21 11·3	23	4 32·9	5 18·8	21 6·2	25	4 32·6	5 6·7	21 9	23
5 34·1	6 9·8	20 9·7	28	5 34·8	6 9·4	20 10·6	25	5 29·8	5 51·8	20 7·9	24
6 35·3	7 14	19 4·9	26	6 37	7 3·4	19 7·6	23	6 35·2	6 53·2	19 5·1	25
7 40·1	8 43·2	18 11·2	29	7 40·7	8 32	19 1·7	24	7 38·2	8 9·5	19 0·1	21
8 33·6	10 12·5	19 4·8	31	8 37·7	10 6·4	19 2·5	24	8 43·4	16 6·9	19 9·3	18
9 39·4	11 46·4	20 6·9	28	9 37·7	11 31·8	20 1·6	24	9 36	11 24·5	19 11·4	21
10 34·8	12 40·8	21 4·6	33	10 33·7	12 30·8	20 11·1	18	10 37·5	12 30·7	21 1·5	20
11 30·2	13 26·6	21 11·3	27	11 35·2	13 30·4	22 1·6	23	11 30·5	13 19·4	21 11·3	18

TABLE XXIX.   (Interpolated from Table XXVIII.)

Showing the Interval between the Moon's Transit and the Time of High Water at the London Docks, for every three degrees of her declination north or south, between opposition and conjunction.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Mean.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
0 30	1 54·9	1 57	1 54·4	1 58·8	1 55	1 48·2	1 47·3	1 46	1 42·1	1 40·5	1 50·4
1 30	1 40	1 38·7	1 39·2	1 39·6	1 37·6	1 33·6	1 33·6	1 25·7	1 28·3	1 24·2	1 34
2 30	1 24·3	1 25·6	1 24·6	1 25·6	1 20·2	1 19·8	1 15·8	1 11·8	1 11·5	1 4·2	1 18·3
3 30	1 10·8	1 10	1 12·4	1 11	1 6·5	1 2·2	1 0·5	0 57·4	0 51·7	0 48·8	1 3
4 30	1 4	1 0·7	1 1	1 1·2	0 56·6	0 50·2	0 49·3	0 47	0 41·4	0 33·7	52·3
5 30	0 57·9	0 56·2	0 53·2	0 56·2	0 50·1	0 43·2	0 39·2	0 34·5	0 32·4	0 22·3	44·5
6 30	0 59·8	1 1·6	0 58·4	0 55·6	0 51·8	0 48·5	0 41·8	0 35·8	0 23·6	0 23	46
7 30	1 26	1 20·4	1 16·9	1 19	1 12·1	1 10·8	1 3·5	0 55·5	0 45·2	0 38	1 6·7
8 30	1 57·3	1 54	1 51·8	1 51·5	1 48	1 45·7	1 33	1 36·7	1 28·3	1 21·3	1 42·8
9 30	2 7	2 14·5	2 16·3	2 15·3	2 9·1	2 3·3	2 1·8	2 4·1	1 53·5	1 48·3	2 5·3
10 30	2 18·9	2 16·5	2 16·9	2 20·4	2 14·2	2 12	2 7	2 4·7	1 58·7	1 55·5	2 10·5
11 30	2 10	2 12·7	2 11·1	2 9·7	2 3·7	2 0·7	1 56·4	1 58·5	1 54·5	1 50·9	2 3

TABLE XXX. (Interpolated from Table XXVIII.)

Showing the Height of High Water at the London Docks for every three degrees of the Moon's Declination north and south, between opposition and conjunction.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Mean.
h m	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0 30	22·58	22·69	22·90	22·78	22·52	22·68	22·54	22·57	22·20	22·31	22·58
1 30	22·94	22·99	23·21	22·87	23·04	23·07	22·94	23·04	22·62	22·38	22·91
2 30	22·61	22·98	22·76	22·80	22·69	22·52	22·77	22·75	22·70	22·51	22·71
3 30	22·51	22·63	22·52	22·42	22·51	22·54	22·50	22·15	22·33	22·30	22·44
4 30	21·50	21·80	21·70	21·80	21·62	21·82	21·70	21·93	21·48	21·50	21·69
5 30	20·90	20·98	20·89	20·70	21·13	21·02	20·93	20·80	20·68	20·56	20·86
6 30	19·65	20·05	20·41	19·94	19·63	19·71	19·96	19·75	19·44	19·54	19·81
7 30	19·81	19·90	19·40	19·67	19·55	19·62	19·34	18·94	19·06	19·03	19·43
8 30	20·14	20·34	20·03	19·80	19·96	19·64	19·64	19·45	19·27	19·08	19·74
9 30	20·71	20·88	20·99	20·84	20·65	20·67	20·38	20·64	20·04	19·88	20·57
10 0	21·81	21·81	21·73	21·88	21·75	21·58	21·40	21·25	20·97	20·91	21·51
11 30	22·07	22·37	22·36	22·29	22·44	22·00	22·00	21·92	22·09	21·90	22·14

TABLE XXXI.

Showing the Difference in the Interval between the Time of the Moon's Transit and the Time of High Water, and the Mean Interval (A.M. part of Table II.) for every minute of the Moon's Horizontal Parallax, between opposition and conjunction.

Moon's Transit.	H. P. 54′.	H. P. 55′.	H. P. 56′.	H. P. 57′.	H. P. 58′.	H. P. 59′.	H. P. 60′.	H. P. 61′.
h m	m	m	m	m	m	m	m	m
0 30	+ 3	+11	+ 5	+ 2	− 2	− 6	− 8	−15
1 30	+ 8	+ 8	+ 4	+ 3	− 4	− 6	− 9	−13
2 30	+ 7	+ 5	+ 3	0	+ 3	− 7	− 4	− 8
3 30	+ 7	+ 3	+ 4	+ 3	− 1	− 4	− 6	
4 30	0	+ 2	+ 1	− 1	− 2	− 4	− 8	
5 30	+ 1	+ 4	+ 2	+ 1	− 1	− 3		
6 30	+ 7	+ 2	+ 2	+ 1	− 3	− 4		
7 30	+ 9	+ 7	+ 7	− 2	− 4	−10		
8 30	+16	+11	+ 5	+ 2	− 1	− 9	−13	
9 30	+16	+13	+ 7	+ 2	− 4	−12	−16	
10 30	+14	+12	+ 5	+ 3	− 2	− 9	−14	−15
11 30	+12	+ 6	+ 5	+ 1	− 4	− 7	−13	−17

TABLE XXXII.

Showing the Difference in the Height of High Water, and the Mean Height (Column B. Table XXIII.) for every minute of the Moon's Horizontal Parallax, and between opposition and conjunction.

Moon's Transit.	H. P. 54′.	H. P. 55′.	H. P. 56′.	H. P. 57′.	H. P. 58′.	H. P. 59′.	H. P. 60′.	H. P. 61′.
h m	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0 30	− ·23	− ·25	− ·39	+ ·17	+ ·03		+ 1·07	+ ·69
1 30	− ·56	− ·62	− ·08	− ·05	+ ·22	+ ·47	+ ·61	+ ·61
2 30	− ·74	− ·53	− ·35	− ·10	+ ·33	+ ·58	+ ·53	+ ·82
3 30	− ·69	− ·50	− ·25	+ ·10	+ ·22	+ ·65	+ ·82	
4 30	− ·66	− ·63	− ·22	− ·13	+ ·27	+ ·75		
5 30	− ·75	− ·48	+ ·21	+ ·23	+ ·15	+ ·78		
6 30	− ·80	− ·35	− ·24	+ ·09	+ ·32	+ ·59		
7 30	− ·61	− ·37	− ·25	+ ·09	+ ·33	+ ·43		
8 30	− ·23	− ·26	− ·09	− ·16	+ ·28	+ ·31	+ ·39	
9 30	− ·29	− ·37	− ·15	+ ·17	+ ·31	+ ·53	+ ·63	
10 30	− ·37	− ·34	− ·16	− ·07	+ ·05	+ ·28	+ ·36	
11 30	− ·37	− ·14	− ·06	+ ·02	+ ·40	+ ·56	+ ·45	

TABLE XXXIII.

Showing the Difference in the Interval between the Time of Moon's Transit and the Time of High Water, and the Mean Interval (A.M. part of Table II.) for every three degrees of the Moon's Declination, between opposition and conjunction.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.
h m	m	m	m	m	m	m	m	m	m	m
0 30	+ 5	+ 7	+ 4	+ 9	+ 5	− 2	− 3	− 4	− 8	− 9
1 30	+ 5	+ 4	+ 4	+ 5	+ 3	− 1	− 1	− 9	− 7	−11
2 30	+ 6	+ 8	+ 7	+ 8	+ 2	+ 2	− 2	− 6	− 6	−14
3 30	+ 9	+ 8	+10	+ 9	+ 5	0	− 1	− 5	−10	−13
4 30	+12	+ 9	+ 9	+ 9	+ 5	− 2	− 3	− 5	−11	−18
5 30	+16	+14	+11	+14	+ 8	+ 1	− 3	− 7	−10	−20
6 30	+16	+18	+14	+12	+ 8	+ 5	− 2	− 8	−20	−21
7 30	+21	+15	+12	+14	+ 7	+ 6	− 1	− 9	−20	−27
8 30	+17	+14	+12	+12	+ 8	+ 8	− 7	− 3	−12	−19
9 30	+ 2	+10	+11	+10	+ 4	− 2	− 3	− 1	−11	−17
10 30	+ 9	+ 7	+ 7	+10	+ 4	+ 2	− 3	− 5	−11	−14
11 30	+ 6	+ 9	+ 7	+ 6	0	− 3	− 8	− 5	− 9	−13

TABLE XXXIV.

Showing the Difference in the Height of High Water, and the Mean Height (Column B. Table XXIII.) for every three degrees of the Moon's Declination, between opposition and conjunction.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.
h m	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0 30	+·03	+·16	+·37	+·25	−·01	+·15	+·01	+·04	−·33	−·22
1 30	+·08	+·13	+·35	+·01	+·18	+·21	+·08	+·18	−·24	−·48
2 30	−·11	+·26	+·04	+·08	−·03	−·20	+·05	+·03	−·02	−·21
3 30	+·15	+·27	+·16	+·06	+·15	+·18	+·14	−·21	−·03	−·06
4 30	−·19	+·12	+·01	+·11	−·07	+·13	+·01	+·24	−·21	−·19
5 30	+·07	+·15	+·06	−·13	+·30	+·19	+·10	−·03	−·15	−·27
6 30	−·25	+·15	+·51	+·04	−·27	−·19	+·06	−·15	−·46	−·36
7 30	+·48	+·57	+·07	+·34	+·22	+·20	+·01	−·39	−·27	−·30
8 30	+·50	+·70	+·39	+·16	+·32	0		−·19	−·37	−·58
9 30	+·20	+·37	+·48	+·33	+·14	+·16	−·13	+·13	−·47	−·63
10 30	+·41	+·41	+·33	+·48	+·35	+·18	0	−·15	−·43	−·49
11 30	+·10	+·40	+·39	+·32	+·47	+·03	+·03	−·05	+·12	−·07

TABLE XXXV.   (Mean of Tables VII. and XXVI.)

Showing the Interval between the Moon's Transit and the Time of High Water at the London Docks for every minute of her Horizontal Parallax; from 10,812 observations, made between the 1st of January 1808 and the 31st of December 1826.

Moon's Transit.	H. P. 54′.	H. P. 55′.	H. P. 56′.	H. P. 57′.	H. P. 58′.	H. P. 59′.	H. P. 60′.	H. P. 61′.
h m	h m	h m	h m	h m	h m	h m	h m	h m
0 0	2 9·7	2 5·8	2 1·5	1 57·6	1 54·6	1 52	1 45	1 42
0 30	2 2·5	1 59·9	1 53·2	1 51·9	1 47·6	1 44·2	1 41·3	1 36·8
1 0	1 52·8	1 50·7	1 46	1 44·5	1 40·1	1 37·6	1 33·5	1 30
1 30	1 43·2	1 41·3	1 38·2	1 35·9	1 32·5	1 30·7	1 25·7	1 23·2
2 0	1 34	1 32·5	1 29·6	1 27	1 26·5	1 22·3	1 19·2	1 16·5
2 30	1 25	1 22·8	1 20·5	1 18·3	1 20·3	1 13·3	1 13	1 10·3
3 0	1 16·9	1 14·3	1 12·9	1 11	1 11·6	1 6·2	1 5	
3 30	1 8·8	1 6	1 6	1 4·6	1 3·4	0 59	0 56·7	
4 0	1 1·1	0 59·5	0 59	0 56·8	0 56·7	0 53·4	0 50	
4 30	0 51·5	0 53·4	0 53·6	0 50·2	0 50·2	0 48·3	0 43·3	
5 0	0 46·3	0 48·1	0 47·8	0 46·2	0 45·4	0 43·8		
5 30	0 43·4	0 44·2	0 42·8	0 43·7	0 41·3	0 40·5		
6 0	0 43·5	0 43·2	0 40·7	0 42·2	0 39·4	0 39·1		
6 30	0 48·6	0 46·7	0 43·6	0 44	0 40·6	0 40·5		
7 0	0 58·1	0 54·6	0 52·9	0 51·2	0 47·5	0 46·5		
7 30	1 14	1 7·7	1 7·6	1 2·4	0 59·6	0 57		
8 0	1 36·1	1 26·5	1 25	1 20·4	1 17·4	1 14	1 11·6	
8 30	1 58·4	1 49·1	1 43·8	1 41·4	1 35·4	1 31·6	1 27·3	
9 0	2 13·6	2 6·1	2 0	1 56·8	1 49·2	1 44·8	1 39·8	
9 30	2 21·7	2 16·6	2 12·4	2 6·4	1 58·9	1 53·2	1 48·2	
10 0	2 25·3	2 22	2 16·7	2 11	2 3·4	1 58·5	1 53·3	
10 30	2 24·8	22·7	2 16·5	2 11	2 7·8	2 0·6	1 55·7	1 54
11 0	2 21·4	2 18·7	1 14·2	2 8·1	2 5·7	2 0·7	1 54·1	1 51
11 30	2 16	2 11·6	2 9	2 3·3	2 0·4	1 58	1 48·7	1 46·9

TABLE XXXVI.

Showing the Time and Height of High Water at the London Docks, corresponding to the mean time of Moon's Transit for every minute of her Horizontal Parallax; from 10,812 observations, made between the 1st of January 1808 and 31st of December 1826.

Hor. Par. 54'.			Hor. Par. 55'.			Hor. Par. 56'.			Hor. Par. 57'.		
Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.
h m	Feet.		h m	Feet.		h m	Feet.		h m	Feet.	
0 31·8	22·15	179	0 31·5	22·24	108	0 31·5	22·24	85	0 31·9	22·67	80
1 25·2	22·27	173	1 27·7	22·32	115	1 26·4	22·80	93	1 30	22·76	79
2 33·5	22·04	162	2 36	22·23	131	2 34·2	22·38	89	2 34	22·73	83
3 27·5	21·69	152	3 30	21·97	130	3 27·8	22·15	110	3 25·8	22·45	91
4 33·2	21·00	147	4 32	21·11	149	4 33·4	21·42	100	4 32·6	21·66	114
5 34·5	20·09	121	5 32	20·30	170	5 31	20·73	118	5 32·7	21·05	119
6 33·6	19·15	134	6 34·3	19·54	159	6 34	19·67	121	6 32·4	19·91	115
7 28·4	18·73	145	7 28	19·00	151	7 28	19·12	114	7 26·9	19·45	104
8 32·4	19·36	165	8 33·3	19·50	123	8 33·1	19·63	121	8 33	19·67	91
9 35·3	20·21	166	9 35·9	20·31	131	9 32·5	20·43	91	9 33	20·75	84
10 35	21·14	170	10 34·2	21·06	114	10 33·8	21·28	98	10 34	21·38	79
11 33·8	21·64	169	11 32·6	21·85	116	11 32·6	21·87	78	11 35	22·19	82

Hor. Par. 58'.			Hor. Par. 59'.			Hor. Par. 60'.			Hor. Par. 61'.		
Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.	Moon's Transit.	Height of Tide.	No. of Obs.
h m	Feet.		h m	Feet.		h m	Feet.		h m	Feet.	
0 34·9	22·77	68	0 34·5	22·66	75	0 32	22·93	101	0 31	23·18	194
1 27·7	23·08	74	1 33·1	23·13	85	1 32	23·25	117	1 29·3	23·41	170
2 30·6	22·93	91	2 32·6	23·13	96	2 34·3	23·35	151	2 25·6	23·55	94
3 29·3	22·50	93	3 27·4	22·93	136	3 29	23·24	187			
4 31	22·09	112	4 32·7	22·36	217	4 25·1	22·58	65			
5 31·3	20·94	136	5 30	21·60	240						
6 31·2	20·23	121	6 32·4	20·45	242						
7 29	19·65	128	7 29·1	19·85	191	7 38·3	20·03	65			
8 30·7	19·75	103	8 28·6	20·04	123	8 35·2	20·18	176			
9 35·5	20·73	94	9 33	20·78	104	9 31·2	21·09	182	9 40·8	21·21	53
10 32·8	21·57	87	10 34	21·74	82	10 32·6	21·85	120	10 32·6	21·85	152
11 35	22·31	82	11 30·4	22·52	82	11 32·2	22·47	96	11 33	22·61	195

TABLE XXXVII.   (Interpolated from Table XXXVI.)

Moon's Transit.	H. P. 54'.	H. P. 55'.	H. P. 56'.	H. P. 57'.	H. P. 58'.	H. P. 59'.	H. P. 60'.	H. P. 61'.
h m	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0 30	22·13	22·23	22·23	22·65	22·73	22·65	22·91	23·17
1 30	22·26	22·32	22·78	22·76	23·07	23·12	23·26	23·41
2 30	22·06	22·24	22·40	22·73	22·92	23·13	23·34	23·54
3 30	21·67	21·97	22·13	22·42	22·50	22·91	23·23	
4 30	20·97	21·14	21·49	21·69	22·10	22·39	22·51	
5 30	20·14	20·33	20·74	21·08	20·96	21·60		
6 30	19·19	19·59	19·72	19·94	20·24	20·48		
7 30	18·74	19·02	19·12	19·46	19·65	19·86	20·04	
8 30	19·33	19·47	19·60	19·64	19·75	20·05	20·17	
9 30	20·14	20·23	20·40	20·71	20·69	20·74	21·07	21·11
10 30	21·12	21·02	21·22	21·33	21·53	21·69	21·82	21·82
11 30	21·61	21·81	21·84	22·12	22·26	22·52	22·45	22·57

TABLE XXXVIII.   (Mean of Tables XI. and XXIX.)

Showing the Interval between the Moon's Transit and the Time of High Water at the London Docks for every three degrees of her Declination north or south; from 10,796 observations.

Moon's Transit. A.M.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Mean.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
0 0	2 3·5	2 4	2 3	2 2	1 59	1 56	1 54	1 51	1 48	1 46·5	1 56·7
0 30	1 56	1 56·7	1 56·5	1 55·6	1 52	1 49·3	1 48	1 45·5	1 42·4	1 39·6	1 50·2
1 0	1 48	1 47	1 48·5	1 47	1 45	1 43·5	1 39	1 36	1 35	1 32	1 42·1
1 30	1 40·4	1 36	1 40	1 38·5	1 38·8	1 36·2	1 29	1 27	1 28·3	1 24	1 33·8
2 0	1 32	1 28·5	1 32	1 32	1 30	1 29·5	1 23	1 20	1 21	1 16·5	1 26·5
2 30	1 24	1 22·5	1 24·4	1 26·3	1 20·6	1 19·8	1 16·8	1 12·7	1 12·2	1 7·6	1 18·7
3 0	1 18	1 17	1 17·5	1 18	1 13·5	1 12	1 9	1 5	1 4·5	0 59	1 11·3
3 30	1 12·4	1 12	1 11	1 10·1	1 6·8	1 2·8	1 0·8	0 58·4	0 56	0 50	1 4
4 0	1 7	1 6	1 5	1 4·5	1 2	0 56	0 54	0 51	0 49	0 41	0 57
4 30	1 1·7	1 0·4	1 0	1 0·3	0 58·1	0 50·6	0 47·5	0 45·5	0 40·5	0 34	0 52
5 0	1 0	0 57	0 57	0 57·0	0 54	0 46·5	0 43·5	0 40·5	0 35	0 29	0 48
5 30	0 59·4	0 56	0 54·6	0 55·7	0 49·6	0 43·3	0 39·8	0 36·1	0 32	0 25·1	0 45·4
6 0	1 0	0 57·5	0 55	0 56	0 50·5	0 44	0 39	0 34·5	0 28	0 22	0 44·7
6 30	1 3·5	1 2·7	0 58	0 57·1	0 52·7	0 46·9	0 40·2	0 35·3	0 25·7	0 23	0 46·5
7 0	1 11	1 11	1 7	1 5	1 1	0 54	0 48	0 43·5	0 34	0 26	0 54
7 30	1 23	1 21·8	1 19·5	1 16	1 14	1 4·4	1 0·4	0 56·9	0 47	0 35·3	1 5·8
8 0	1 40	1 39	1 36	1 32	1 30	1 22	1 16	1 14	1 3	0 54	1 22·6
8 30	1 56·4	1 54	1 52·7	1 51·2	1 46·5	1 44·2	1 34·4	1 36	1 22·9	1 18	1 41·3
9 0	2 4·2	2 6	2 7	2 6	2 0	1 55	1 50	1 50	1 42	1 36	1 55·6
9 30	2 8	2 13·6	2 16·2	2 13·4	2 10·5	2 2·7	2 1	2 3	1 55	1 48	2 5·1
10 0	2 14·5	2 18	2 16	2 18	2 15	2 8	2 6	2 6	2 1·5	1 54	2 9·7
10 30	2 19·8	2 18·3	2 15	2 19·2	2 14·6	2 11·3	2 5·9	2 5·6	2 2·4	1 56·4	2 10·8
11 0	2 16	2 16	2 13	2 15	2 11	2 8	2 4	2 2·5	1 58·5	1 55	2 7·9
11 30	2 11	2 10·4	2 9·3	2 8·5	2 5	2 2·6	1 59·7	1 56·8	1 52·6	1 51·2	2 2·7

TABLE XXXIX.   (Mean of Tables IX. and XXX.)

Showing the Height of High Water at the London Docks for every three degrees of the Moon's Declination north or south; from 10,796 observations.

Moon's Transit. A.M.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Mean.
h m	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0 0	22·42	22·44	22·58	22·49	22·61	22·36	22·32	22·28	22·13	22·09	22·37
0 30	22·68	22·47	22·80	22·64	22·64	22·71	22·57	22·55	22·29	22·39	22·57
1 0	22·85	22·62	22·94	22·76	22·77	22·86	22·75	22·77	22·49	22·39	22·66
1 30	22·99	22·80	23·09	22·85	22·92	22·92	22·93	22·99	22·68	22·38	22·85
2 0	22·90	22·84	23·00	22·87	22·95	22·78	23·20	22·83	22·72	22·52	22·86
2 30	22·81	22·83	22·85	22·91	22·93	22·63	23·44	22·67	22·64	22·64	22·83
3 0	22·70	22·72	22·68	22·67	22·78	22·58	22·91	22·50	22·37	22·45	22·64
3 30	22·58	22·56	22·49	22·37	22·56	22·54	22·38	22·32	22·10	22·27	22·42
4 0	22·12	22·26	22·18	22·10	22·10	22·17	22·08	22·08	21·80	22·04	22·09
4 30	21·67	21·95	21·85	21·82	21·63	21·81	21·77	21·84	21·50	21·81	21·83
5 0	21·32	21·48	21·50	21·36	21·31	21·39	21·35	21·27	21·14	21·20	21·33
5 30	21·00	20·95	21·14	20·81	21·02	20·96	20·92	20·69	20·78	20·60	20·89
6 0	20·37	20·56	20·76	20·37	20·59	20·42	20·42	20·30	20·14	20·05	20·40
6 30	19·77	20·16	20·34	20·11	20·12	19·86	19·93	19·89	19·52	19·50	19·92
7 0	19·82	19·99	19·88	19·97	19·69	19·61	19·62	19·39	19·32	19·17	19·65
7 30	19·87	19·91	19·58	19·84	19·42	19·45	19·32	18·89	19·13	18·85	19·43
8 0	19·91	20·12	19·83	19·68	19·75	19·64	19·47	19·18	19·14	18·87	19·56
8 30	20·00	20·33	20·08	19·53	20·08	19·83	19·64	19·52	19·29	19·07	19·74
9 0	20·45	20·66	20·47	20·17	20·43	20·19	20·04	20·0	19·69	19·50	20·16
9 30	20·93	20·99	20·87	20·83	20·78	20·60	20·43	20·49	20·11	19·93	20·60
10 0	21·36	21·45	21·36	21·36	21·25	21·05	20·88	20·84	20·61	20·42	21·06
10 30	21·79	21·89	21·84	21·88	21·70	21·50	21·33	21·19	21·12	20·91	21·51
11 0	21·99	22·16	22·10	22·12	22·13	21·78	21·69	21·60	21·52	21·33	21·94
11 30	22·16	22·99	22·37	22·32	22·56	22·03	22·06	22·00	21·90	21·76	22·21

TABLE XL.

Showing the Difference in the Interval between the Time of the Moon's Transit and the Time of High Water, and the Mean Interval (Column A. Table III.) for every three degrees of her Declination.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.
h m	m	m	m	m	m	m	m	m	m	m
0 0	+ 7	+ 7	+ 6	+ 5	+ 2	− 1	− 3	− 6	− 9	−11
0 30	+ 6	+ 7	+ 6	+ 5	+ 2	− 1	− 2	− 4	− 8	−10
1 0	+ 6	+ 5	+ 6	+ 5	+ 3	+ 1	− 3	− 6	− 7	−10
1 30	+ 5	+ 1	+ 5	+ 4	+ 4	+ 1	− 6	− 8	− 7	−11
2 0	+ 6	+ 3	+ 6	+ 6	+ 4	+ 3	− 3	− 6	− 5	−10
2 30	+ 6	+ 5	+ 6	+ 8	+ 3	+ 2	− 1	− 5	− 6	−10
3 0	+ 7	+ 6	+ 7	+ 7	+ 3	+ 1	− 2	− 6	− 6	−12
3 30	+ 9	+ 9	+ 8	+ 7	+ 4	0	− 2	− 5	− 7	−13
4 0	+11	+10	+ 9	+ 8	+ 6	0	− 2	− 5	− 7	−15
4 30	+11	+ 9	+ 9	+ 9	+ 7	0	+ 2	− 5	−10	−17
5 0	+15	+12	+12	+12	+ 9	+ 1	− 1	− 4	−10	−16
5 30	+16	+13	+12	+13	+ 7	0	− 3	− 7	−11	−18
6 0	+18	+16	+13	+14	+ 8	+ 2	− 3	− 7	−14	−20
6 30	+19	+19	+18	+13	+ 9	+ 3	− 4	− 9	−18	−21
7 0	+19	+19	+15	+13	+ 9	+ 2	− 4	− 8	−18	−26
7 30	+18	+17	+15	+11	+ 9	− 1	− 4	− 8	−18	−30
8 0	+17	+16	+13	+ 9	+ 7	− 1	− 7	− 9	−20	−29
8 30	+17	+15	+14	+12	+ 7	+ 5	− 5	− 3	−16	−21
9 0	+ 8	+10	+11	+10	+ 4	− 1	− 6	− 6	−14	−20
9 30	+ 3	+ 9	+11	+ 8	+ 5	− 2	− 4	− 2	−10	−17
10 0	+ 5	+ 8	+ 6	+ 8	+ 5	− 2	− 4	− 4	− 8	−16
10 30	+10	+ 8	+ 5	+ 9	+ 5	+ 1	− 4	− 4	− 8	−14
11 0	+ 8	+ 8	+ 5	+ 7	+ 3	0	− 4	− 5	− 9	−13
11 30	+ 8	+ 7	+ 6	+ 5	+ 2	0	− 3	− 6	−10	−12

TABLE XLI.

Showing the Difference in the Height of High Water and the Mean Height (Column B. Table XXIV.) for every three degrees of the Moon's Declination.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.
h m	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0 0	+·10	+ ·12	+·26	+·17	+·29	+·04	....	−·04	−·19	−·23
0 30	+·10	− ·11	+·22	+·08	+·06	+·13	−·01	−·03	−·29	−·19
1 0	+·14	− ·09	+·23	+·05	+·06	+·15	+·04	+·06	−·22	−·32
1 30	+·18	− ·01	+·28	+·04	+·11	+·11	+·12	+·18	−·13	−·43
2 0	+·08	+ ·02	+·18	+·05	+·13	−·04	+·38	+·01	−·10	−·30
2 30	+·09	+ ·11	+·13	+·19	+·21	−·09	+·72	−·05	−·08	−·08
3 0	+·10	+ ·12	+·08	+·07	+·18	−·02	+·31	−·10	−·23	−·15
3 30	+·20	+ ·18	+·11	−·01	+·18	+·16	....	−·06	−·28	−·11
4 0	+·02	+ ·16	+·08	......	....	+·07	−·02	−·02	−·30	−·06
4 30	−·04	+ ·24	+·14	+·11	−·08	+·10	+·06	+·13	−·21	+·10
5 0	......	+ ·16	+·18	+·04	−·01	+·07	+·03	−·05	−·18	−·12
5 30	+·14	+ ·09	+·28	−·05	+·16	+·10	+·06	−·17	−·08	−·26
6 0	+·02	+ ·21	+·41	+·02	+·24	+·07	+·07	−·05	−·21	−·30
6 30	−·15	+ ·24	+·42	+·19	+·20	−·06	+·01	−·03	−·40	−·42
7 0	+·26	+ ·43	+·32	+·41	+·13	+·05	+·06	−·17	−·24	−·39
7 30	+·50	+ ·54	+·21	+·47	+·05	+·08	−·05	−·48	−·24	−·52
8 0	+·47	+ ·68	+·39	+·24	+·31	+·20	+·03	−·26	−·30	−·57
8 30	+·33	+ ·66	+·41	−·14	+·41	+·16	−·03	−·15	−·38	−·60
9 0	+·25	+ ·46	+·27	−·03	+·23	−·01	−·16	−·20	−·51	−·70
9 30	+·41	+ ·47	+·35	+·31	+·26	+·08	−·09	−·03	−·41	−·59
10 0	+·42	+ ·51	+·42	+·42	+·31	+·11	−·06	−·10	−·33	−·52
10 30	+·37	+ ·47	+·42	+·46	+·28	+·08	−·09	−·23	−·30	−·51
11 0	+·25	+ ·42	+·36	+·38	+·39	+·04	−·05	−·14	−·22	−·41
11 30	+·18	+1·01	+·39	+·34	+·58	+·05	+·08	+·02	−·08	−·22

TABLE XLII.

Showing the Difference in the Interval between the Time of the Moon's Transit and the Time of High Water, and the Mean Interval (Column A. Table III.) for every minute of her Horizontal Parallax.

Moon's Transit.	H. P. 54′.	H. P. 55′.	H. P. 56′.	H. P. 57′.	H. P. 58′.	H. P. 59′.	H. P. 60′.	H. P. 61′.
h m	m	m	m	m	m	m	m	m
0 30	+12	+10	+ 3	+ 2	− 2	− 6	− 9	−13
1 30	+ 8	+ 6	+ 3	+ 1	− 2	− 4	− 7	−12
2 30	+ 7	+ 5	+ 3	0	+ 2	− 5	− 5	−18
3 30	+ 6	+ 3	+ 3	+ 2	0	− 4	− 6	
4 30	+ 1	+ 2	+ 3	+ 1	− 1	− 3	− 8	
5 30	0	+ 1	0	+ 1	− 2	− 2		
6 30	+ 5	+ 3	0	0	− 3	− 3		
7 30	+ 9	+ 3	+ 3	− 3	− 5	− 8		
8 30	+19	+10	+ 5	− 2	− 4	− 7	−12	
9 30	+17	+12	+ 7	− 1	− 5	−12	−17	
10 30	+15	+13	+ 7	− 1	− 2	− 9	−14	−16
11 30	+13	+ 9	+ 6	0	− 3	− 5	−14	−16

TABLE XLIII.

Showing the Difference in the Height of High Water and the Mean Height (Column B. Table XXIV.) for every minute of the Moon's Horizontal Parallax.

Moon's Transit.	H. P. 54′.	H. P. 55′.	H. P. 56′.	H. P. 57′.	H. P. 58′.	H. P. 59′.	H. P. 60′.	H. P. 61′.
h m	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0 30	−·45	−·35	−·35	+·07	+·15	+·07	+·33	+·59
1 30	−·55	−·49	−·03	−·05	+·26	+·31	+·45	+·60
2 30	−·66	−·48	−·32	+·01	+·20	+·41	+·62	+·82
3 30	−·71	−·41	−·25	+·04	+·12	+·53	+·85	
4 30	−·74	−·57	−·22	−·02	+·39	+·68	+·80	
5 30	−·72	−·53	−·12	+·22	+·10	+·74		
6 30	−·73	−·33	−·20	+·02	+·32	+·56		
7 30	−·63	−·35	−·25	+·09	+·28	+·49	+·67	
8 30	−·34	−·20	−·07	−·03	+·08	+·38	+·50	
9 30	−·38	−·29	−·12	+·19	+·17	+·22	+·55	+·59
10 30	−·30	−·40	−·20	−·09	+·11	·27	+·40	+·40
11 30	−·37	−·17	− ·14	+·14	+·28	+·54	+·47	+·59

The following Tables may be used in predicting the phenomena of the tides, with the argument of the moon's transit in apparent time.

For the Time of High Water at the London Docks.

Table III., column A., containing the semimenstrual inequality + a constant, which is again inserted here for the convenience of reference.

Table XLIV. containing the correction for the moon's parallax.

Table XLV. containing the correction for the moon's declination.

The last two Tables have been obtained from Tables XL. and XLII., by removing arbitrarily the irregularities which those Tables present.

Table XLVI., formed by arbitrary alterations from Table G., p. 148, gives the correction for the calendar months.

To the result obtained must be added the equation of time, in order to have the time of high water sought in mean time.

Tables XLIII. and XLIV. may probably be safely employed for all the ports in the United Kingdom. It should be borne in mind that these Tables cannot in any case be depended upon to within two or three minutes, from the great irregularities of the phenomena to which they refer, and from the difficulty of ascertaining by observation the precise time of high water. The observations upon which they are founded are only recorded to the nearest five minutes, and they were not always made with so much care as might have been desired.

For the Height of High Water at the London Docks.

Table XXIV., column B., containing the semimenstrual inequality + a constant.

Table XLVII. containing the correction for the moon's parallax.

Table XLVIII. containing the correction for the moon's declination.

The last two Tables have been formed by arbitrary changes from Tables XLIII. and XLII., which Tables present great irregularities; for the height of high water is subject to much greater irregularity than the time. The effect of changes in the moon's parallax upon the height appears to be considerably greater than that of changes in her declination.

COLUMN A. TABLE III.

Containing the semimenstrual inequality + a constant, and showing the Interval between the Moon's Transit and the Time of High Water, from the Philosophical Transactions, 1831, p. 401.

Moon's Transit.	h 0	h 1	h 2	h 3	h 4	h 5	h 6	h 7	h 8	h 9	h 10	h 11
Interval	h m 1 57	h m 1 42	h m 1 26	h m 1 11	h m 0 56	h m 0 45	h m 0 42	h m 0 52	h m 1 23	h m 1 56	h m 2 10	h m 2 8

TABLE XLIV.

Showing the Correction for the Moon's Parallax, formed by arbitrary alterations from Table XLII.

Moon's Transit.	H. P. 54'.	H. P. 55'.	H. P. 56'.	H. P. 57'.	H. P. 58'.	H. P. 59'.	H. P. 60'.	Moon's Transit.
h m	m	m	m	m	m	m	m	h m
0 0	+11	+ 7	+ 3	0	− 3	− 7	−11	0 0
0 30	+11	+ 7	+ 3	0	− 3	− 7	−11	0 30
1 0	+10	+ 6	+ 3	0	− 3	− 6	−10	1 0
1 30	+ 9	+ 6	+ 3	0	− 3	− 6	− 9	1 30
2 0	+ 8	+ 5	+ 2	0	− 2	− 5	− 8	2 0
2 30	+ 7	+ 4	+ 2	0	− 2	− 4	− 7	2 30
3 0	+ 6	+ 4	+ 2	0	− 2	− 4	− 6	3 0
3 30	+ 5	+ 4	+ 2	0	− 2	− 4	− 5	3 30
4 0	+ 4	+ 3	+ 1	0	− 1	− 3	− 4	4 0
4 30	+ 3	+ 2	+ 1	0	− 1	− 2	− 3	4 30
5 0	+ 2	+ 1	0	0	0	− 1	− 2	5 0
5 30	+ 1	0	0	0	0	0	− 1	5 30
6 0	+ 1	0	0	0	0	0	− 1	6 0
6 30	+ 4	+ 3	+ 1	0	− 1	− 3	− 4	6 30
7 0	+ 6	+ 4	+ 2	0	− 2	− 4	− 6	7 0
7 30	+ 9	+ 5	+ 2	0	− 2	− 5	− 9	7 30
8 0	+12	+ 8	+ 4	0	− 4	− 8	−12	8 0
8 30	+15	+10	+ 5	0	− 5	−10	−15	8 30
9 0	+17	+11	+ 6	0	− 6	−11	−17	9 0
9 30	+17	+11	+ 6	0	− 6	−11	−17	9 30
10 0	+15	+10	+ 5	0	− 5	−10	−15	10 0
10 30	+14	+10	+ 5	0	− 5	−10	−14	10 30
11 0	+13	+ 9	+ 4	0	− 4	− 9	−13	11 0
11 30	+12	+ 8	+ 4	0	− 4	− 8	−12	11 30

TABLE XLV.
Showing the Correction for the Moon's Declination, formed from Table XL.

Moon's Transit.	0	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Moon's Transit.
h m	m	m	m	m	m	m	m	m	m	m	h m
0 0	+ 8	+ 6	+ 4	+ 2	+ 1	0	− 3	− 6	− 9	−12	0 0
0 30	+ 7	+ 6	+ 4	+ 2	+ 1	0	− 2	− 6	− 9	−12	0 30
1 0	+ 6	+ 5	+ 4	+ 3	+ 1	0	− 2	− 6	− 9	−11	1 0
1 30	+ 6	+ 5	+ 4	+ 3	+ 1	0	− 3	− 6	− 9	−11	1 30
2 0	+ 5	+ 4	+ 3	+ 2	+ 1	0	− 3	− 6	− 9	−10	2 0
2 30	+ 6	+ 5	+ 4	+ 3	+ 2	0	− 2	− 5	− 6	−11	2 30
3 0	+ 7	+ 5	+ 4	+ 3	+ 2	0	− 2	− 5	− 6	−12	3 0
3 30	+ 8	+ 6	+ 4	+ 2	+ 1	0	− 3	− 6	− 8	−13	3 30
4 0	+ 9	+ 7	+ 5	+ 5	+ 2	0	− 3	− 7	−11	−15	4 0
4 30	+12	+10	+ 8	+ 6	+ 3	0	− 3	− 7	−11	−16	4 30
5 0	+15	+12	+ 9	+ 6	+ 3	0	− 3	− 7	−11	−17	5 0
5 30	+17	+15	+11	+ 7	+ 3	0	− 3	− 7	−13	−18	5 30
6 0	+18	+16	+12	+ 8	+ 3	0	− 4	− 9	−15	−20	6 0
6 30	+19	+17	+12	+ 8	+ 3	0	− 5	−10	−16	−23	6 30
7 0	+19	+17	+12	+ 8	+ 3	0	− 5	−12	−21	−26	7 0
7 30	+18	+16	+11	+ 8	+ 3	0	− 6	−12	−18	−28	7 30
8 0	+17	+15	+10	+ 7	+ 2	0	− 5	−12	−18	−28	8 0
8 30	+16	+15	+10	+ 7	+ 2	0	− 4	−10	−15	−23	8 30
9 0	+15	+12	+ 9	+ 6	+ 3	0	− 3	− 8	−14	−21	9 0
9 30	+13	+11	+ 8	+ 4	+ 1	0	− 4	− 8	−13	−18	9 30
10 0	+12	+10	+ 7	+ 5	+ 1	0	− 4	− 8	−12	−17	10 0
10 30	+11	+ 9	+ 6	+ 3	+ 1	0	− 3	− 6	−10	−15	10 30
11 0	+10	+ 8	+ 5	+ 2	+ 1	0	− 3	− 6	− 9	−14	11 0
11 30	+ 9	+ 7	+ 4	+ 2	+ 1	0	− 3	− 8	− 8	−13	11 30

TABLE XLVI.
Showing the correction for the calendar months, formed from Table G, p. 148.

Moon's Transit.	Jan. July.	Feb. Aug.	March. Sept.	April. Oct.	May. Nov.	June. Dec.	Moon's Transit.
h	m	m	m	m	m	m	h
0	− 2	− 2	0	+ 2	+ 2	0	0
1	− 3	− 2	0	+ 3	+ 2	0	1
2	− 7	− 2	+ 2	+ 7	+ 2	− 2	2
3	− 4	0	+ 3	+ 4	0	− 3	3
4	0	+ 1	+ 4	0	− 1	− 4	4
5	+ 3	+ 5	+ 6	− 3	− 5	− 6	5
6	+ 8	+ 6	0	− 8	− 6	0	6
7	+11	+ 5	− 3	−11	− 5	+ 3	7
8	+ 8	+ 2	− 5	− 8	− 2	+ 5	8
9	+ 3	− 1	− 1	− 3	+ 1	+ 1	9
10	0	− 1	0	0	+ 1	0	10
11	− 1	− 1	− 1	+ 1	+ 1	+ 1	11

TABLE XLVII.
Showing the correction for the Moon's Parallax in the Height of High Water, formed by arbitrary alterations from Table XLIII.

Moon's Transit.	H. P. 54'.	H. P. 55'.	H. P. 56'.	H. P. 57'.	H. P. 58'.	H. P. 59'.	H. P. 60'.	Moon's Transit.
h m	Feet.	Feet.	Feet.		Feet.	Feet.	Feet.	h m
0 0	−·42	−·28	−·14	0	+·14	+·28	+·42	0 0
1 0	−·45	−·30	−·15	0	+·15	+·30	+·45	1 0
2 0	−·55	−·36	−·18	0	+·18	+·36	+·55	2 0
3 0	−·65	−·44	−·22	0	+·22	+·44	+·64	3 0
4 0	−·72	−·48	−·24	0	+·24	+·48	+·72	4 0
5 0	−·75	−·50	−·25	0	+·25	+·50	+·75	5 0
6 0	·72	−·48	−·24	0	+·24	+·48	+·72	6 0
7 0	−·67	−·44	−·22	0	+·22	+·44	+·67	7 0
8 0	−·62	−·40	−·20	0	+·20	+·40	+·62	8 0
9 0	−·57	−·38	−·19	0	+·19	+·38	+·57	9 0
10 0	−·52	−·36	−·18	0	+·18	+·36	+·52	10 0
11 0	−·47	−·32	−·16	0	+·16	+·32	+·47	11 0

TABLE XLVIII.

Showing the Correction for the Moon's Declination in the Height of High Water, formed by arbitrary alterations from Table XLI.

Moon's Transit.		0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Moon's Transit.	
h	m	Feet.	Feet.	Feet.	Feet.	Feet.		Feet.	Feet.	Feet.	Feet.	h	m
0	0	+·25	+·20	+·15	+·10	+·05	0	—·05	—·10	—·15	—·20	0	0
1	0	+·17	+·13	+·10	+·07	+·03	0	—·03	—·06	—·09	—·30	1	0
2	0	+·12	+·09	+·06	+·04	+·02	0	—·02	—·04	—·06	—·09	2	0
3	0	+·07	+·05	+·03	+·02	+·01	0	—·01	—·02	—·03	—·05	3	0
4	0	+·02	+·02	+·01	0	0	0	0	0	—·01	—·02	4	0
5	0	+·05	+·04	+·03	+·02	+·01	0	—·01	—·02	—·03	—·04	5	0
6	0	+·15	+·12	+·09	+·06	+·03	0	—·03	—·06	—·09	—·12	6	0
7	0	+·25	+·29	+·15	+·10	+·05	0	—·05	—·10	—·15	—·20	7	0
8	0	+·50	+·40	+·30	+·20	+·10	0	—·10	—·20	—·30	—·40	8	0
9	0	+·50	+·40	+·30	+·20	+·10	0	—·10	—·20	—·30	—·40	9	0
10	0	+·42	+·33	+·24	+·16	+·08	0	—·08	—·16	—·24	—·33	10	0
11	0	+·35	+·28	+·21	+·14	+·07	0	—·07	—·14	—·21	—·28	11	0

The last Tables, intended to serve for the prediction of the tides in the port of London, seem to me fairly to embody the results furnished by more than 10,000 observations. They might perhaps be amended in a subsequent revision, by applying these corrections, considered as approximate, to each of the observations employed, with a contrary sign, so as to obtain a discussion of their errors. I am confident, however, that they are not susceptible of any material improvement; and that we may proceed safely to investigate the laws or expressions which they represent. It will also be desirable to ascertain, by a discussion of their errors, when used in predicting the phenomena, whether the fluctuations of the atmosphere, as indicated by the barometer, have any sensible effect, as is the case, according to M. DAUSSY, on the coast of France, and also to discover the extent to which the phenomena are modified by winds and storms.

The Tables might be rendered more convenient for practice by the addition of a constant, so as to render all the corrections positive, but I have retained them in their present state in order that the law of the inequalities may be more apparent. This change can easily be made if required, but by such a process the intrinsic character of the Tables is not altered.

In the Philosophical Transactions for 1833 I gave the semimenstrual inequality, including of course the establishment for Brest, Plymouth, Portsmouth, and Sheerness. M. DESSIOU has since deduced the following Tables for Pembroke Dockyard, Liverpool, Howth, and Ramsgate.

Pembroke Dockyard.			Liverpool Docks.			Howth Harbour.			Ramsgate Harbour.		
Moon's Transit.	Correspond-ing Interval.	No. of Obs.	Moon's Transit.	Correspond-ing Interval.	No. of Obs.	Moon's Transit.	Correspond-ing Interval.	No. of Obs.	Moon's Transit.	Correspond-ing Interval.	No. of Obs.
h m	h m		h m	h m		h m	h m		h m	h m	
0 14·8	6 0	29	0 17·2	11 17·4	56	0 18	10 57	8	0 13	11 41·5	32
0 45·1	5 53·7	30	0 45·5	11 11·1	60	0 44	10 55	7	0 43	11 40·4	29
1 16·1	5 46·9	30	1 15·5	11 4·3	55	1 12	10 47	8	1 15·2	11 32·3	33
1 46·5	5 39·5	29	1 44·7	10 57	59	1 45	10 30	9	1 42 2	11 31·8	26
2 15·7	5 30·3	27	2 15·3	10 58·5	59	2 19·5	10 22·5	8	2 15·6	11 12·4	30
2 44	5 23·5	27	2 45·1	10 43·8	59	2 48	10 10	7	2 45·1	11 9·4	27
3 14·9	5 15·6	30	3 14·4	10 38·2	57	3 13	10 14	5	3 15·7	11 2·7	32
3 44·5	5 14·3	26	3 44·6	10 30·4	63	3 45	10 10	9	3 45·4	10 54·2	26
4 12·7	5 8·6	28	4 15·5	10 26·7	61	4 19	10 6	7	4 15·5	10 43·1	32
4 44·5	5 1·4	34	4 45·9	10 24·8	62	4 45	10 4	8	4 45·3	10 41·6	28
5 17	4 59·7	28	5 16	10 25·5	58	5 16	10 22	8	5 17·3	10 36·7	34
5 45·5	4 55·3	28	5 45·2	10 26·5	55	5 45	10 16	9	5 46·7	10 34·6	26
6 14	5 1·7	28	6 13·8	10 34·2	54	6 13·3	10 26	14	6 17	10 44·9	32
6 42·7	5 9·1	27	6 44·5	10 49·5	65	6 47	10 33	18	6 43·9	10 56·6	31
7 13·7	5 26·7	33	7 16·6	11 6·5	57	7 19	10 58	13	7 14	11 1·9	48
7 46·3	5 47·7	33	7 45·5	11 21	54	7 47	11 3	13	7 47	11 11·1	32
8 16·4	6 2·6	27	8 14·7	11 36·5	58	8 15	11 17	14	8 18	11 31·6	29
8 44·5	6 10	29	8 44	11 45·6	58	8 44	11 27	13	8 45·5	11 53·8	27
9 16·2	6 20·5	31	9 16·4	11 46·4	59	9 13·3	11 32	15	9 14·3	11 53·9	31
9 47·5	6 23·1	31	9 43·7	11 48·5	58	9 43	11 33	13	9 47	12 2·8	33
10 16·7	6 23·3	26	10 14·8	11 44·6	59	10 13·5	11 33·5	15	10 18	11 54·3	27
10 45	6 20·6	29	10 43·5	11 39·4	55	10 45·7	11 29	13	10 44·5	11 59·2	26
11 13	6 15·6	27	11 11·5	11 34·6	58	11 17·0	11 23	10	11 15·1	11 52·6	31
11 42·6	6 8·7	30	11 44·3	11 26·4	63	11 45	11 17	10	11 44·3	11 52·6	28

The Pembroke tides are from 697 observations made between the 1st of November 1832 and the 31st of October 1833. Those for the Liverpool Docks are from 1402 observations made in the years 1772 and 1791. Those for Howth Harbour are from only 254 observations, made in 1817 between the 16th of June and the 15th of December. Those for Ramsgate Harbour are from 730 observations, made between the 1st of September 1831 and the 31st of August 1833.

TABLE showing the Interval between the Moon's Transit and the Time of High Water.

Moon's Transit.	Pembroke.	Liverpool.	Howth.	Ramsgate.	Moon's Transit.
h m	h m	h m	h m	h m	h m
0 0	6 4	11 22	11 8	11 46	0 0
0 30	5 57	11 14	11 0	11 41	0 30
1 0	5 50	11 8	10 50	11 36	1 0
1 30	5 43	11 1	10 40	11 30	1 30
2 0	5 35	10 54	10 28	11 19	2 0
2 30	5 27	10 47	10 18	11 11	2 30
3 0	5 20	10 41	10 13	11 5	3 0
3 30	5 15	10 34	10 10	10 59	3 30
4 0	5 11	10 29	10 8	10 49	4 0
4 30	5 5	10 26	10 7	10 42	4 30
5 0	5 1	10 25	10 8	10 39	5 0
5 30	4 57	10 26	10 12	10 36	5 30
6 0	4 58	10 30	10 20	10 40	6 0
6 30	5 5	10 42	10 29	10 50	6 30
7 0	5 18	10 58	10 42	10 59	7 0
7 30	5 37	11 13	10 56	11 7	7 30
8 0	5 55	11 29	11 10	11 20	8 0
8 30	6 7	11 41	11 22	11 41	8 30
9 0	6 16	11 46	11 30	11 54	9 0
9 30	6 22	11 48	11 33	11 58	9 30
10 0	6 23	11 46	11 33	11 59	10 0
10 30	6 22	11 42	11 31	11 57	10 30
11 0	6 18	11 37	11 26	11 56	11 0
11 30	6 12	11 30	11 19	11 53	11 30